

**KNOWLEDGE AND ATTITUDES OF PAIN
MANAGEMENT BY NURSES IN SAUDI ARABIAN
EMERGENCY DEPARTMENTS:
A MIXED METHODS INVESTIGATION**

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Dedication

In the name of Allah the merciful, and prayer and peace upon the best of his creatures.

I dedicate this thesis to my mother whose continuous support has been my mainstay throughout the entire process; and to my father, who passed away before I started my study journey but who encouraged me to complete my postgraduate studies. I still remember all his words of encouragement that have always helped me through any difficulties.

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Statement of Authentication

The work presented in this thesis is, to the best of my knowledge and belief, original except as acknowledged in the text. I hereby declare that I have not submitted this material, either in full or in part, for a degree at this or any other institution.

Nihad Mohammed

Signature.....Date.....

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List of Abbreviations

BOPM	Barriers to Optimal Pain Management
DON	Director of Nursing
ED	Emergency Department
HN	Head nurse
HREC	Human Research Ethics Committee (University of Western Sydney)
IASP	International Association for the Study of Pain
KASRP	Knowledge and Attitudes Survey Regarding Pain
NSAID	Non-steroidal anti-inflammatory drug
PRN	<i>Pro re nata</i> (also known as ‘As-needed range order’)
RN	Registered nurse
SCD	Sickle cell disease
SCFHS	Saudi Commission for Health Studies
US	United States
WHO Ladder	The World Health Organization’s cancer pain protocol

Abstract

Upon arrival at the Emergency Department, nurses are typically the first healthcare providers whom patients encounter. Throughout the patient's stay, registered nurses play the greatest role in pain management. This important role in managing pain is the focus of the present research project, which was set in the Emergency Department in the Kingdom of Saudi Arabia, where there is an absence of mixed-methods research regarding nurses' pain management. The research project investigated nurses' knowledge and attitudes; barriers and facilitators to optimal pain management; and the influence of these upon pain management for patients who present to the Emergency Department in Saudi Arabia.

A two-phase, sequential explanatory mixed methods design with quantitative emphasis was chosen. During Phase 1, a descriptive cross-sectional survey was distributed to 1440 ED nurses at 12 hospitals located in four Saudi Arabian cities, to which 629 valid responses were received, a response rate of 43.6%. In Phase 2, semi-structured interviews were conducted with a sub-group drawn from survey participants. Both data sets were analysed individually and then brought together to probe and better understand the survey findings in greater depth.

In the Phase 1 study, a mean total score for the Knowledge and Attitudes Survey Regarding Pain (KASRP) was 19.19 of a possible 40 (48.0% correct). The authors of the original KASRP set an 80% benchmark threshold to represent adequate pain management knowledge and attitudes; of the 629 Phase 1 survey participants, only 13 (2.1%) met or exceeded this threshold. Predictors of higher total KASRP scores in Phase 1 were years as a registered nurse ($p=0.027$) and attendance at short-course training in pain management ($p=0.034$). Overall survey results indicated that a large majority of Phase 1 survey respondents had substantial deficits in knowledge and attitudes regarding pain; yet, despite these deficits, respondents were confident in their pain management knowledge and ability. In addition, survey results showed that participants primarily perceived external factors, such as workload and Emergency Department overcrowding, to be barriers to optimal pain management whereas they

tended to perceive internal factors such as nurses' knowledge and skills to be facilitators.

Analysis of findings from Phase 2 indicated that, to a certain extent, interview participants relied on knowledge of best practice regarding pain management. Thus, in some instances, patients received adequate pain management in the ED. However, Phase 2 interview participants' descriptions of their pain management practice also indicated the influence of numerous myths and misconceptions about pain and its management, and some pain management was therefore sub-optimal. As well, although participants revealed some positive attitudes in the interviews, they also described ways their practice was influenced by negative attitudes towards patients. For example, a commonly reported perception amongst interview participants was that numerous patients attending the Emergency Department over-report their pain and that in some such cases participants noted that they would deliberately withhold patient care and would not administer prescribed analgesia.

Integrated analysis of Phase 1 results and Phase 2 findings revealed five key findings. These were: (1) participants prioritised 'reading' the way their patients reported their pain as a way to define such reports in terms of their perceived truthfulness; (2) participants were more likely to base their pain management on best practice for patients whom they perceived as truthful in their pain reports; (3) Emergency Department nursing unit cultures that supported participants to make clinical decisions based on intuition and accepted practice within the unit, even when such decisions were contrary to best practice; (4) participants may be at risk for both frustration and compassion fatigue, possibly due to the challenges of caring for patients with high pain levels in the emergency setting; and (5) participants tended to over-identify patients with pain as possible substance abusers and preferred to under-administer opioids, and that these practices apparently stemmed from a lack of clarity regarding best practice in the use of opioid analgesia.

Recommendations for improvements in pain management arising from this research project include: for clinical practice, the development and consistent use of triage and pain assessment tools that include not only triage acuity levels but also emphasise the primacy of patient self-report of pain and pain intensity, and the development of standard protocols for pain management according to best practice guidelines; for

education, the provision of ongoing short-course pain management education to ensure that all Emergency Department nurses have accurate, up-to-date knowledge and are made aware of misconceptions with respect to patients and analgesia as these can adversely affect optimal pain management. Finally, recommendations for further research are to develop operational definitions of nurses' knowledge and attitudes regarding pain, and to design studies to test educational interventions aimed at reinforcing correct nursing knowledge while correcting misconceptions, and influencing nurses' attitudes toward a more uniformly positive and empathetic view of patients in pain, in keeping with nursing's core values.

Chapter One: Introduction

Pain is a nearly universal human experience. All of us – except those unfortunate individuals who are insensitive to pain (Bartholomew, Lazar, Marqueling, Lee-Messer, Jaradeh, & Teng, 2014) – will have pain at various times throughout our lives. The greater the intensity of pain, the more unpleasant and alarming it can be. Pain compels many people to attend the Emergency Department (ED), seeking relief and treatment (Berben, Meijs, van Dongen, van Vugt, Vloet, Mintjes-de Groot, & van Achterberg, 2008; Bhakta & Marco, 2014; Motov & Khan, 2009; Todd, Ducharme, Choiniere, Crandall, Fosnocht, Homel, & Tanabe, 2007). In the ED, pain management is known to be an important factor in determining patient well-being and outcomes (Chang, Daubresse, Kruszewski, & Alexander, 2014).

Upon arrival at the ED, nurses are typically the first healthcare providers whom patients encounter. Moreover, registered nurses (RNs) play the greatest role in pain management throughout the patient's stay in the ED (Pasero, 2009; Thomas, 2011; Thomas, 2013). This important role of the RN in managing pain in the ED is the focus of the present research project. The chosen setting was the Kingdom of Saudi Arabia, for several reasons. First, pain has been recognised as an urgent healthcare issue and an important priority in Saudi Arabia (Saudi Society for Pain Medicine, 2009). First, with more than 20 million Saudi Arabian ED cases recorded annually, (Ministry of Health of the Kingdom of Saudia Arabia, 2012), pain in the ED is a substantial issue. Second, very little research has investigated pain management nursing in the ED in Saudi Arabia, but those very few studies that have addressed ED nurses' pain management in this setting have noted an urgent need for improvements (Rehmani, 2010; Taha & Rehmani, 2011). Third, although nurses' knowledge and attitudes regarding pain have been extensively researched in a number of geographic regions worldwide (Ferrell & McCaffery, 2012), this research field has been understudied in the Middle East, and in particular there is a dearth of research set in the ED in Saudi Arabia. Last, the researcher is an RN and a Saudi citizen with

significant first-hand experience in the ED in nursing practice and administration as well as research, and has thus been well-equipped to undertake the present research.

As the International Society for the Study of Pain and others have noted, the ED presents significant challenges for pain management (Buckley, 2014; DeVivo, Quinn Griffin, Donahue, & Fitzpatrick, 2013; International Association for the Study of Pain, 2011a; International Association for the Study of Pain, 2011; Mackey, 2014; Wentzel & Brysiewicz, 2014). As part of the research directed at understanding and addressing this issue, numerous studies have established that nurses' knowledge and attitudes regarding pain influences nursing practice (Ferrell & McCaffery, 2012). In addition, numerous barriers and facilitators to satisfactory pain management have been identified (American Medical Association, 2013; Bennetts, Campbell-Brophy, Huckson, & Doherty, 2012; Berben, Meijs, Van Grunsven, Schoonhoven, & Van Achterberg, 2012; Bergman, 2012). There is a lack of such studies identified in the ED within Saudi Arabia, however.

This research project addresses this gap in the nursing literature. It contributes to nursing knowledge in terms of what RNs in the ED in Saudi Arabia know about pain and pain management, and what barriers and facilitators they encounter. Because of its mixed methods design, comprising both quantitative and a qualitative phases, this research project has also gained insight into not only what nurses do when they manage pain in the ED in Saudi Arabia, but also how they conduct their practice, and why they do things the way they do. Furthermore, since no mixed methods research in pain management nursing research had been conducted in Saudi Arabia to date, the research project was underpinned by the pragmatic paradigm. This ensured practical flexibility regarding the conduct of the data collection and analysis, within its design parameters. Given the understudied ED setting in Saudi Arabia, this choice allowed the researcher to adapt to aspects of research conditions in the field that could not necessarily be anticipated at the design stage.

This chapter introduces the research project by providing background information about the ED setting in Saudi Arabia. Next is a brief overview of the design of the research project. Detailed explanation of the design and how it served this research project is presented in a later chapter in this thesis. The purpose is presented in a

subsequent section of this chapter, followed by an explanation establishing its significance. A final section outlines the organisation of the thesis.

1.1 Background: Saudi Arabian Healthcare

1.1.1 Saudi Arabia: Country Profile

Saudi Arabia is among the largest of the Middle Eastern countries, with an area of more than 2.2 million square kilometres and oil reserves that are among the largest in the world (Khaliq, 2012). During the second half of the twentieth century the government of Saudi Arabia developed the use of its oil resources to enable a dramatic economic and social transformation (Aldossary, While, & Barriball, 2008). Its population had previously been mostly rural, but after an unprecedented period of growth and social mobility, a majority moved to urban centres (Khaliq, 2012). In addition, by 2012, the population had grown from approximately four million when the reforms began, to over 29 million, with non-Saudis representing 32% of the total population (Ministry of Health of the Kingdom of Saudia Arabia, 2012; World Health Organization-Eastern Mediterranean Regional Office, 2013). Among these transformations in society over the past 50 years have been great improvements in the provision of healthcare in Saudi Arabia, with positive effects on the overall health of the population (Aldossary, et al., 2008). The Ministry of Health in Saudi Arabia and the World Health Organization-Eastern Mediterranean Region both now report annually on socio-economic indicators which affect the health of Saudi citizens (Ministry of Health of the Kingdom of Saudia Arabia, 2012; World Health Organization-Eastern Mediterranean Regional Office, 2013).

1.1.2 The Healthcare System

The healthcare system in Saudi Arabia comprises both public and private healthcare services. Private hospitals in Saudi Arabia provide healthcare services primarily to non-Saudis, expatriate workers in particular, funded through private health insurance plans (Aldossary, et al., 2008). The public healthcare sector provides comprehensive health care to all Saudi citizens through governmental health ministry departments and quasi-government military hospital systems (Ministry of Health of the Kingdom

of Saudi Arabia, 2013b; Ministry of Health of the Kingdom of Saudi Arabia, 2012; 2015), as well as to all Hajj pilgrims (Ministry of Health of the Kingdom of Saudi Arabia, 2013b), as discussed below. Several government ministries manage the public healthcare sector. Public sector Ministry of Health hospitals represent approximately 60% of Saudi Arabian acute care facilities (Colliers International, 2012) and 9% are quasi-government hospitals administered by Saudi Arabia's Ministry of Higher Education, and by its Armed Forces, including the Military and National Guard hospitals (Ministry of Health of the Kingdom of Saudi Arabia, 2013b).

Healthcare services are most heavily concentrated in the key cities of Riyadh, Jeddah, Dammam and Khobar, primarily in the urban centres, with fewer services available in the suburbs of these cities, in other cities in Saudi Arabia, and in rural areas (Colliers International, 2012). To provide care through its network of healthcare facilities, the Ministry of Health has implemented a plan to provide service through its primary healthcare centres located throughout the country, and supplemented by its network of secondary care hospitals and specialised facilities which are located primarily in the four major cities noted above (Ministry of Health of the Kingdom of Saudi Arabia, 2013b).

1.1.3 Healthcare Service During The Hajj

Hospitals in the city of Makkah have great significance for national and cultural reasons. An extraordinary strain is placed on emergency healthcare services in the city of Makkah during the Hajj (pilgrimage) season with the influx of approximately three million pilgrims to the Holy City (Ministry of Health of the Kingdom of Saudi Arabia, 2012). Therefore all Ministry of Health hospitals, Armed Forces, and National Guard hospitals in the city are linked into and represent the Hajj Health system. Under the auspices of the Health Ministry, this system provides health services, including emergency care, to all pilgrims in the performance of Hajj (Ministry of Health of the Kingdom of Saudi Arabia, 2012).

1.1.4 Commitment to Healthcare

During the past 20 years in particular, primary, secondary and tertiary health care levels and the quality of services and facilities have improved tremendously due to the government's commitment to improvements (World Health Organization-Eastern Mediterranean Regional Office, 2013). Currently, 100% of Saudis have access to improved sanitation and 97% have access to an improved water source; 83% of the Saudi population live in urban areas (World Health Organization-Eastern Mediterranean Regional Office, 2013). Between 1970 and 2012, total life expectancy increased from 52 to 73.8 years (Ministry of Health of the Kingdom of Saudi Arabia, 2012). Among other healthcare improvements, the introduction of mandatory vaccination in the 1980s resulted in a dramatic decrease in the under-5-years mortality rate, from 250/1000 live births in 1960 to 18.7/1000 in 2012 (Ministry of Health of the Kingdom of Saudi Arabia, 2012).

The government of Saudi Arabia is committed to ongoing efforts to improve healthcare, and the eventual goal is to provide free access to healthcare services not only for all Saudi Arabian nationals but also for all expatriates who work in the public sector in Saudi Arabia (Aldossary, et al., 2008). The total expenditure on health as a percentage of gross domestic product (GDP) was 3.7% in 2013, of which 77.1% was from government and 22.9% from private expenditure (Ministry of Health of the Kingdom of Saudi Arabia, 2013b).

1.1.5 Pain Management

The Saudi Society for Pain Medicine consists of pain specialists who recognise pain to be a major health problem and an important priority in Saudi Arabia (Saudi Society for Pain Medicine, 2009). The stated mission of the Saudi Society for Pain Medicine is:

...increasing awareness and knowledge about pain in medical workers and public citizens in order to alleviate suffering and to reduce the pain and also to contribute to the establishment of living environment free from pain and provide methods of prevention and treatment of pain for all citizens of our beloved Kingdom and then to everyone in

the Muslim world and the world (Saudi Society for Pain Medicine, 2009, para. 1).

Research investigating pain management is therefore much needed in Saudi Arabia.

1.1.6 Emergency Department Guidelines

The Ministry of Health in Saudi Arabia publishes a guidebook for the provision of emergency services (Ministry of Health of the Kingdom of Saudi Arabia, 2013a). The guidebook provides an overview of emergency services which includes, for hospital EDs: detailed lists of recommended supplies and equipment; standard layouts for emergency wards; suggested pharmacological/therapeutic drugs for use in the ED (with a proviso that in each hospital, the medical director, medical staff, and director of the pharmacy have ultimate decision-making power with respect to the analgesics that will be kept for use); and declarations of patient rights. The guidebook also defines an extensive range of specific aspects of ED policies and procedures, although specifics of pain assessment or pain management policies, procedures or protocols are not included, with the exception of “Preparation and Administration of Oral and Parenteral Medication” and “Handling of Narcotics and Controlled Drugs”. ED Clinical Quality indicators included in the Guidelines for Emergency Department (Ministry of Health of the Kingdom of Saudi Arabia, 2013a) are “Total Time in Emergency Department” with a standard threshold of 240 minutes, and “Time to Initial Assessment” with a standard threshold of 15 minutes. Time to pain assessment and time to analgesia are not included in the clinical quality indicators. Policies, procedures and protocols not specified in the guidelines are left to the discretion of individual hospitals (Ministry of Health of the Kingdom of Saudi Arabia, 2013a).

1.1.7 Pain Management Nursing Research

In Saudi Arabia, research has been conducted that investigates hospital nurses’ knowledge of pharmacological measures for managing pain (Kaki, Daghistani, & Msabeh, 2009); pain clinic experience (Kaki, 2006); oncology nurses’ knowledge and attitudes (Alqahtani & Jones, 2015); management of pain in sickle cell disease (SCD) in children (Taha & Rehmani, 2011) and in adults (Udezue & Girshab, 2005);

and pain practices in an ED in Saudi Arabia focusing on time to analgesia (Rehmani, 2010). All these studies are mono-method; that is, they use either a quantitative or a qualitative approach and none uses a mixed method. The review of the literature undertaken for this study has identified no studies conducted in Saudi Arabia investigating knowledge and attitudes regarding pain of RNs in the ED. In addition, during the literature review the researcher was unable to locate any mixed method nursing studies related to pain management practice, knowledge and attitudes regarding pain, or barriers and facilitators to optimal pain management, in any setting in Saudi Arabia.

1.1.8 Certification of Registered Nurses

The Saudi Commission for Health Specialties (SCFHS) provides certification for all health care professionals. Nurses with a Diploma or a Bachelor of Science Nursing (BSN) degree can receive certification as an RN by passing a qualifying examination set by the SCFHS.

1.1.9 Scope of Practice for Registered Nurses

The International Council of Nurses (2013) has published a position statement on nursing scope of practice as a general guide. This organisation notes that each country's government has the individual responsibility of providing "legislation which recognises the distinctive and autonomous nature of nursing practice including a defined scope of practice that is reflective of nurses' capabilities as well as flexible and responsive to the dynamic nature of healthcare delivery and the public's healthcare needs" (International Council of Nurses, 2013, p. 1). In Saudi Arabia, the SCFHS bears responsibility for setting out scopes of practice to ensure professional standards and ethics in Saudi Arabia within all health professions (Ministry of Health of the Kingdom of Saudi Arabia, 2013c). However, the Nursing Board within the SCFHS has not yet formalised and defined a scope of practice for nurses working in Saudi Arabia (Aldossary, 2013).

In the future, the SCFHS may define a scope of nursing practice for Saudi Arabia, and this may include standardised pain protocols for nurses throughout the Saudi Arabian healthcare system, including in the ED (Aldossary, 2013). However, at the

time of writing, not all EDs have such protocols, and those that do exist, vary (Aldossary, 2013; Ministry of Health of the Kingdom of Saudi Arabia, 2013a). Such protocols are only in place in some few institutions for use in their own facility, and are chosen or created at the discretion of each individual hospital and ED (Ministry of Health of the Kingdom of Saudi Arabia, 2013a).

1.1.10 Registered Nurses' Role in Saudi Arabian Emergency

Departments

In the ED in Saudi Arabia, RNs perform a pivotal role in many aspects of pain management, including pain assessment through initial assessment at triage and through ongoing re-assessment and the administration of pharmacological and non-pharmacological pain management interventions. RNs do not prescribe in Saudi Arabia but they do administer analgesia as prescribed by ED physicians, and make clinical decisions regarding analgesic dosages and frequency of administration in those EDs whose prescribing protocols include *pro re nata* (PRN) orders. It is considered to be a nursing obligation to perform these and other nursing tasks with skill and efficiency (Ministry of Health of the Kingdom of Saudia Arabia, 2012).

1.2 Design

This study employed a two-phase, sequential explanatory mixed methods design to investigate the knowledge and attitudes of ED nurses, and develop an understanding of what barriers and facilitators they encounter in their pain management practice. With little previously-existing nursing research regarding pain management in the ED in Saudi Arabia, a research design was required that would contribute knowledge from multiple perspectives. That is, it was desired to understand the 'why and 'how' of the phenomenon as well as the 'what'. The two-phase, sequential explanatory mixed methods design was able to fulfil these requirements by first capturing descriptive data in the quantitative phase and then offering the development of insights into the meaning of those results in the qualitative phase. Furthermore, given the multidimensional and complex nature of pain management nursing in the ED, a mixed methods approach was chosen that would be able to capture this complexity

and multidimensionality in all its richness (Carr, 2009; Ivankova, Creswell, & Stick, 2006).

Phase 1 consisted of a quantitative cross-sectional survey of RNs in the EDs of 14 hospitals in Saudi Arabia. The design was quantitative-dominant. The purpose of this phase was to collect descriptive data regarding demographics; knowledge and attitudes regarding pain; and barriers and facilitators to optimal pain management. Statistical analysis generated a description of pain management nursing practice in the ED in Saudi Arabia.

The qualitative study in Phase 2 consisted of semi-structured interviews with a subset of survey participants. As an explanatory study, the qualitative phase interviews followed the quantitative phase's cross-sectional survey, to obtain findings that would help to explain the quantitative results (Creswell, 2009; Creswell, Klassen, Plano Clark, & Smith, 2011).

Integration (mixing) of the data began with preliminary analysis of a subset of returned surveys (n=311) with which to inform the qualitative interviews. Integration continued during quantitative and qualitative data analysis, and finally during the drawing of inferences during the integrated analysis of both data sets. The integrated analysis allowed the researcher to not only gain knowledge about the phenomenon, but to draw inferences from the results that informed recommendations for practice, education and future research. The study design and its methodological approach were well suited to the study aims, which are outlined below.

1.3 Aims

This study sought to examine the relationship between the knowledge and attitudes of registered nurses in Saudi Arabian EDs, various demographic characteristics, and their pain management behaviours. The study aims were to: (a) investigate the knowledge and attitudes regarding pain of registered nurses in the ED in Saudi Arabia; (b) determine the barriers and facilitators these registered nurses perceived to affect their practice; and (c) gain insight into the relationship between the knowledge and attitudes of ED nurses, their perception of barriers and facilitators to optimal pain management, and their pain management practice.

1.4 Significance

Although a need to improve pain management in the ED in Saudi Arabia had previously been identified (Rehmani, 2010; Taha & Rehmani, 2011), no research in Saudi Arabia had previously investigated emergency nurses' knowledge and attitudes regarding pain; barriers and facilitators to optimal pain management in the ED, and the way these factors influence pain management practice in the ED in Saudi Arabia. The present study investigated these research areas, addressing these gaps identified in the literature.

Furthermore, a two-phase, sequential explanatory mixed methods study design had not previously been applied to the study of ED nurses' knowledge and attitudes regarding pain, or barriers and facilitators to pain management. Thus, use of a mixed methods design has provided an opportunity to explore this topic using a different methodological approach that may offer insights into RNs' practice in the ED.

1.5 Thesis Outline

The thesis comprises six chapters. This introductory chapter, Chapter One, has provided the background to this research project conducted in the context of Saudi Arabia, as well as outlining its design, purpose and significance.

Chapter Two critically examines the literature and describes factors that the existing body of research has indicated influence pain management nursing, in a range of settings. The subsequent section discusses the research that has investigated the prevalence of pain in the ED, and the nature of the ED environment itself as it affects pain management. The chapter next describes and critically analyses international research that has investigated nurses' knowledge and attitudes regarding pain. Next, it examines the literature regarding the barriers nurses face when they manage pain, and the facilitators that enable them to do so adequately. The last section of the chapter provides global and local contexts for the study, to establish its importance within them.

Chapter Three outlines the methodological approach used, and the theoretical framework of pragmatism which underpins the study. The chapter provides a rationale for the sequential explanatory mixed methods study design. It details the conduct of the two phases of the study, including the population, sample, setting, recruitment, data collections methods and analysis of the quantitative and qualitative data.

Chapters Four and Five present, respectively, the survey results from Phase 1 of the project and interview findings from Phase 2. Chapter Four reports results of the statistical analysis of the Phase 1 quantitative data. The presentation of these results gives some insights into the views of nurses who deal with patients' pain on a daily basis, and situates these views within the framework of current nursing knowledge regarding pain as well as their own confidence in their ability to manage pain in their ED.

Chapter Five presents the results of the semi-structured interviews conducted in Phase 2, based on a range of themes developed in the course of the analysis process. The themes discussed are related to: the participating nurses' experience in the complex, high-pressure acute environment that is the ED; their views on the issues that arise in emergency care; their perspective on the interrelationships among themselves and their patients and colleagues; and the impact they perceive that their nursing experience and education have on the nursing work they do.

Chapter Six discusses the study's findings and situates these in relation to the literature relevant to pain management in the ED. The conclusions drawn from the quantitative and qualitative analyses are presented, together with the integrated analysis of the findings. Implications of these findings are proposed. In addition, the chapter provides a description of the strengths and limitations of the research project, a discussion of the ways in which validity of the study was approached with respect to the integration of the quantitative and qualitative components. Finally, implications for nursing practice, education and research are offered, as well as suggestions for further research in this field.

1.6 Conclusion

This chapter began with an introduction to the research territory and then provided background with a synopsis of the Saudi Arabian healthcare system, including brief descriptions of overall pain management, ED guidelines, current research to date in pain management nursing and the nurses' role. Also provided in this introduction is a brief overview of the research design, as well as its aims and its significance in terms of its contribution to nursing knowledge. Overall, this chapter has established a research niche for the study, by indicating the gaps in the previous research. The following chapter, Chapter Two, provides a review of the literature relevant to pain management nursing in the ED.

Chapter Two: Literature Review

This chapter presents a review of the literature regarding research in pain management. The discussion of the literature critically evaluates this research, indicating strengths and weaknesses of previously conducted studies. Overall, the literature review provides the reader with an understanding of the major findings as presented in the literature that are relevant to this research project investigating nurses' pain management in the ED in Saudi Arabia.

The first section of this chapter presents a synopsis of pain management including pain management in nursing care, the RN's roles in the ED, and the prevalence of pain in the ED. The next section examines nurses' knowledge and attitudes regarding pain, beginning with definitions of 'nursing knowledge' and 'nursing attitudes', followed by review of the international literature regarding nurses' knowledge and attitudes regarding pain, and subsequently by a section examining the research investigating the barriers and the facilitators to pain management. The next sections of the chapter provide a discussion about current pain theory and physiology, and a synopsis of global, regional and local concerns about pain management. Finally, this chapter concludes with a description of the current research conducted in Saudi Arabia regarding pain management nursing.

2.1 Pain Theory and the Physiology of Pain

The last several decades have provided important developments in pain theory and neurophysiology as it applies to and affects the management of pain in emergency nursing practice (Buckley, 2014; Helms & Barone, 2008). The history of pain theory and the trajectory of pain research provide both perspective and a sense of connectedness with those who have conceptualised, investigated and treated pain (Vadivelu, 2011). The way healthcare providers conceive of pain is fundamental to

the way pain is treated (Motov & Khan, 2009; Rupp & Delaney, 2004). However, the meaning of pain is different from culture to culture, and also has changed across time (Rey, 1995; Vadivelu, 2011; Woolf, 2010). In many traditions, pain has been thought to result from an imbalance in certain life forces, to be an affliction of a supernatural nature, to be emotional or spiritual in nature, to originate in the heart, the skin, and the brain (Rey, 1995; Vadivelu, 2011). While some healthcare traditions today retain aspects of these views about the nature of pain and its source or cause (Rey, 1995; Vadivelu, 2011), current views based in the Western medical model, which is the framework for healthcare in most developed and developing countries in the world, including Saudi Arabia, consider pain to be a neurobiological phenomenon (Cross, 1994; Helms & Barone, 2008; Marchand, 2008; Moayedi & Davis, 2013; Steeds, 2009; Woolf, 2010).

2.1.1 Pain Theory

Within the Western medical model, pain researchers over the past 50 years have significantly improved pain knowledge and have unravelled many puzzling aspects of pain physiology (Collett & Berkley, 2007). Based on neurological research results, there were some dramatic and significant advances in neurobiological pain theory in the mid-20th century. Melzack and Wall's (1965) seminal Gate-Control Theory of Pain revolutionised scientists' thinking about how the human body generates, perceives, and modulates pain signals (Moayedi & Davis, 2013; Steeds, 2009). The conceptual model of gate-control mechanisms that Melzack and colleagues defined (Melzack & Casey, 1968; Melzack & Wall, 1965), proposed that pain has multiple, interactive dimensions, encompassing "the sensory-discriminative (intensity, location, quality, and duration), the affective-motivational (unpleasantness and the subsequent flight response), and the cognitive-evaluative (appraisal, cultural values, context, and cognitive state) dimensions of pain" (Moayedi & Davis, 2013, p. 10).

Melzack and Wall further developed the Gate-Control Theory since they first published it. It is now known as the Neuromatrix Theory, and was introduced in 2005 at the Third World Congress of the World Institute of Pain (Melzack, 2005). According to this theory, which is currently considered an accurate model of pain perception and transmission, each person's physiological makeup includes a unique,

built-in aspect of pain perception, the body-self neuromatrix (Melzack, 2005; Melzack & Wall, 1999). This genetically-determined neuronal network is responsible for pain transmission (Crowley-Matoka, Saha, Dobscha, & Burgess, 2009). The concept of the body-self neuromatrix helps to model the uniqueness of individual pain experiences including differences in pain due to gender, stress and previous pain experiences (Helms & Barone, 2008).

This neuromatrix model also accounts for the three types of pain (so-called pain mechanisms) (McMahon, 2013; Melzack, 2005): acute, chronic, and neuropathic. Acute pain is of sudden onset and short duration; chronic, pain is recurring or persisting; and neuropathic pain arises from damage to the central or peripheral nervous system (Helms & Barone, 2008; McMahon, 2013). The neuromatrix model also indicates that the relationship between pain stimuli and pain response or perception is not straightforward (Crowley-Matoka, et al., 2009; Helms & Barone, 2008; Marchand, 2008; Melzack, 2005; Moayedi & Davis, 2013; Patel, 2010; Steeds, 2009). Pain theory research has revealed the profoundly complex nature of pain and the multiplicity of the various interconnecting factors involved in pain phenomena (Melzack, 2005; Melzack & Wall, 1999).

2.1.2 Neuroevolutionary Functions of Pain

From a neuroevolutionary perspective, pain has valuable protective, adaptive and social functions (Alspach, 2010; Bastian, Jetten, Hornsey, & Leknes, 2014; Decety, 2014). One way pain's protective function operates is by triggering a reflex to protect a part of the body from further injury, for example, snatching the hand away when it is burned. This neurobiological protective mechanism of instant withdrawal serves to minimise tissue damage from the noxious stimulus: this has evolved as a necessity for survival (Woolf, 2010). The adaptive function relates to learning from past painful experiences, and to avoidance of hazards such as jumping from a height, crashing into walls, touching hot objects or grasping something sharp (Alspach, 2010; Decety, 2014). Those who suffer from the rare conditions known as congenital insensitivity to pain and acquired analgesia do not respond reflexively to injury (Indo, 2009, 2014). Without the protective and adaptive feedback that pain provides, these individuals are unable to avoid injury, do not perceived injuries when they

occur, and even devastating, life-threatening injury or major illness is likewise not perceived (Indo, 2009, 2014).

Another way pain is protective is to minimise use of the affected body part. This aspect of pain, from a neuroevolutionary perspective, occurs so the injured or ill person will minimise the use of the area or refrain from exposing it, so it will be less prone to risk of further injury or of infection (Woolf, 2010). The damage to affected body tissues is often associated with inflammation, which also can result in pain signal transmission (Helms & Barone, 2008; Marchand, 2008). As the injury to the body tissues heals, pain in the affected area typically decreases and eventually stops, when the body stops sending pain signals (Moayedi & Davis, 2013; Patel, 2010; Steeds, 2009).

Finally, pain also serves an important social function (Fitzgibbon, Giummarra, Georgiou-Karistianis, Enticott, & Bradshaw, 2010). When a human being experiences pain, those nearby will generally respond to provide comfort and help. This altruism, deeply ingrained in human behaviour, is the phenomenon now known as ‘pain empathy’ (Alspach, 2010; de C Williams, 2002a; Decety, 2011, 2014; Fitzgibbon, et al., 2010; Gleichgerrcht & Decety, 2014). Pain empathy has additional adaptive survival value when a member of a family or social group needs extra care and protection while healing (Alspach, 2010; Decety, 2011, 2014; Fitzgibbon, et al., 2010). Neurobiologically, the activation of pain empathy response involves activation of the region of a responder’s own brain that is responsible for pain perception (Decety, 2014; Fitzgibbon, et al., 2010). This ‘mirror’ perception of another’s pain has been confirmed in neurobiological research using functional magnetic resonance imaging, which has demonstrated that both pain expression and pain empathy are ‘hard-wired’ into the human brain (Fitzgibbon, et al., 2010).

Such findings about pain empathy resonate with the nursing profession’s core values, within which empathy for those who are in pain is a central tenet (Alspach, 2010; Decety, 2014). Nevertheless, pain empathy research has also revealed that there are complex factors that can interfere with or override these neurobiologically-based pain empathy responses, including cultural constraints, learned behaviours, and so-called ‘compassion fatigue’, a protective mechanism known to occur among medical professionals, such as ED personnel, who have frequent and prolonged exposure to

traumatic injuries (Decety, 2014; Drury, Craigie, Francis, Aoun, & Hegney, 2014; Gleichgerricht & Decety, 2014; Hegney, Craigie, Hemsworth, Osseiran-Moisson, Aoun, Francis, & Drury, 2014; Hooper, Craig, Janvrin, Wetsel, & Reimels, 2010; Jenkins & Baird, 2002; Showalter, 2010; Wentzel & Brysiewicz, 2014). Compassion fatigue is considered to consist of the sub-scales of burnout and secondary traumatic stress, as typically measured on the Professional Quality of Life Tool (ProQOL) (Stamm, 2010). Compassion fatigue can arise out of exposure to trauma; levels of compassion fatigue among ED nurses have been found to be approximately 20-25% (Hegney, et al., 2014; Hooper, et al., 2010) with similar results indicated in an study of compassion satisfaction, compassion fatigue and burnout among ED nurses in the U.S. (Hunsaker, Chen, Maughan, & Heaston, 2015). Essentially, it is because human beings are hard-wired to have empathy that the act of assisting those who are in pain or have suffered trauma can cause stress and may results in self-protective measures such as compassion fatigue (Hunsaker, et al., 2015).

2.1.3. Pain Physiology

Despite the complexity of pain phenomena, we currently know a great deal about what pain is from a physiological perspective, and how it affects the human body (Cross, 1994; Dealtry, 1997; Helms & Barone, 2008; Marchand, 2008; McMahon, 2013; Melzack, 2005; Moayedid & Davis, 2013; Patel, 2010; Steeds, 2009; Woolf, 2010).

Among some of the most recent advances in pain research are the decoding of sensation at the molecular level, the imaging of the human brain during the processing of nociceptive pain, discoveries about the plasticity of the nociceptive system, and a highly sophisticated understanding of the underlying physiological mechanisms for the neurobiological functions of pain described above (McMahon, 2013; Moayedid & Davis, 2013; Patel, 2010; Woolf, 2010). Of the three distinct types of pain noted above (acute, chronic, and neuropathic), two sub-types of acute and chronic pain, respectively, are related to protective and adaptive functions: nociceptive pain and inflammatory pain (Patel, 2010; Woolf, 2010). The third pain type, neuropathic pain, is pathological and therefore is maladaptive rather than protective (Haanpää et al., 2009; Lecomte et al., 2011; Patel, 2010; Woolf, 2010).

Nociceptive pain is neurally processed and encoded in a process known as nociception (Loeser, 2008). This type of pain is primarily protective and is associated with noxious stimuli that have the potential to damage tissue (Helms & Barone, 2008; Nicholson, 2006; Woolf, 2010). The second pain type, inflammatory pain, is both protective and adaptive: following the occurrence of tissue damage or when infection is present, the body's immune system is mobilised to create swelling, tenderness and extra sensitivity in the injured area (Woolf, 2010). This response has evolved to discourage contact with the affected area and to reduce or prevent movement so that healing can take place (Alspach, 2010; Decety, 2011, 2014; Fitzgibbon, et al., 2010; Woolf, 2010). The third pain category also consists of two sub-types: neuropathic pain, which arises from disease of or damage to the nervous system; and dysfunctional pain, which occurs when there has been no damage or inflammation, but pain is perceived nevertheless (Moayed & Davis, 2013; Steeds, 2009; Woolf, 2010). Abnormal neurophysiological and neuroanatomical changes can result if nociceptive pain is not adequately treated, and thus can result in pathological pain (Basbaum, Bautista, Scherrer, & Julius, 2009; Moayed & Davis, 2013).

Valuable information has been gained from functional magnetic resonance imaging of the human brain during the processing of pain (Apkarian, Bushnell, Treede, & Zubieta, 2005; Seifert & Maihofner, 2011). Discoveries about the plasticity of the nociceptive system have shed light on extremely puzzling phenomena (Basbaum, et al., 2009; Woolf, 2010). Clinicians now have access to the science that explains known conditions such as allodynia, analgesia (both congenital and acquired), dysaesthesia, hypoalgesia, and hyperalgesia and hyperpathia (Basbaum, et al., 2009; Moayed & Davis, 2013; Nicholson, 2006). Such conditions result from maladaptive changes, often in response to pain, in both central and peripheral nervous systems (Basbaum, et al., 2009; Moayed & Davis, 2013).

Whereas brain plasticity is adaptive and protective when it produces hypersensitivity that triggers a reflex response, it is maladaptive when it results in change in the body's neural systems, such as when acute pain (sudden in onset and of short duration) develops into chronic pain (ongoing, recurring, and lasting longer than expected in the usual course of acute illness or injury) (Baliki, Baria, & Apkarian, 2011; Basbaum, et al., 2009; Davis, 2011; Seifert & Maihofner, 2011; Woolf, 2010).

This knowledge of the physiological aspects of pain can inform interpretation of acute and chronic pain presentations in the clinical setting (Helms & Barone, 2008).

2.1.4 Applying Pain Theory & Pain Physiology in the Clinical

Setting

New breakthroughs have led to a more nuanced grasp of what the underlying mechanisms of pain sensation are, and these have now been decoded down even to the molecular level (Basbaum, et al., 2009). This research is not only informational; it also has significant pragmatic value for clinical practice. Knowing the underlying physiological mechanisms for the differences between acute and chronic pain contributes to improved pain assessment and treatment due to the knowledge that “pain is not generated by an immutable, hardwired system, but rather results from the engagement of highly plastic molecules and circuits [...]. Importantly, this new information has identified a host of potential therapeutic targets for the treatment of pain” (Basbaum, et al., 2009, p.267). Different types of pain exist within the categories of acute and chronic pain, and that there are varying protocols for the distinct types, points to the potential for improved pain management (Helms & Barone, 2008).

These explanations from research in pain theory and physiology clarify the distinct types of pain, and have led to the development of effective treatments for each. Pain experts specify that pain without clear clinical manifestations, of which neuropathic pain is a prominent example, must be recognised, respected as real for the patient, and treated (Haanpää, et al., 2009; Helms & Barone, 2008; International Association for the Study of Pain, 2015; Lecomte, et al., 2011). Without these explanations and treatment protocols, these types of pain tend to be attributed to psychological causes or arising from addiction, malingering or attention-seeking, and left untreated (Alspach, 2010; Berben, et al., 2012; Bergman, 2012; Helms & Barone, 2008).

With the extent of our current understanding of pain pathophysiology and analgesia, pain relief is known to be possible in most instances, whatever the mechanism or severity (International Association for the Study of Pain, 2011a; International Association for the Study of Pain, 2015; Patel, 2010). Yet research indicates that on a worldwide basis, pain management is often sub-optimal (Brennan, Carr, & Cousins,

2007a; International Association for the Study of Pain, 2011; Rich, 2000a, 2000b; Stork & Hofmann-Kiefer, 2009). The global scale of human suffering from untreated or undertreated pain is vast (International Association for the Study of Pain, 2011, 2015); however, as compelling as the relief of suffering is, this is not the only issue involved in pain management. Among the advances in our knowledge of pain is the understanding that unrelieved pain is extremely harmful (Cousins, 2012).

2.1.5 The Detrimental Effects of Pain

Significantly, while pain researchers were making unprecedented advances in theoretical and neurobiological understanding of pain mechanisms in the middle of the last century, the healthcare community continued to consider that pain treatment was a matter of compassionate choice rather than a medical necessity (Liebeskind, 1991). At the beginning of the 1990s, the prevailing view was that pain – despite being distressing for the patient – was not actually malign, in and of itself (Liebeskind, 1991). More than two decades ago, however, a group of pioneering researchers had begun publishing results of studies on the effects of pain on human health that were pointing the way to a revision of previous beliefs that whilst pain was physiological, it did not have lasting harmful effects on physiology. It was suggested in an editorial in the journal *Pain*, “the dictum ‘pain does not kill,’ sometimes invoked to justify ignoring pain complaints, may be dangerously wrong” and research was proving this to be the case (Liebeskind, 1991, p. 3).

At the Sixth World Congress on Pain Management held in Adelaide, Australia in 1990 (Bond, Charleton, & Woolf, 1991), assembled healthcare providers heard the results of clinical trials that directly challenged the long-held view that pain was benign. They heard that researchers had, in those early ground-breaking studies, compared patient outcomes following severe pain from trauma or surgery, and the results indicated that in addition to the effects of injury or disease themselves, the stress of pain itself could cause physiological damage (Ben-Eliyahu, Yirmiya, Liebeskind, Taylor, & Gale, 1991; Bond, et al., 1991; Campbell, Raja, & Meyer, 1988; Cousins, 1991; Zusman, 1992). Evidence was accumulating that untreated pain led to poorer outcomes, and increased mortality and morbidity; whereas, in contrast, when pain was well managed for trauma or surgery patients, their outcomes

improved, with lower mortality and morbidity (Ben-Eliyahu, et al., 1991; Bond, et al., 1991; Campbell, et al., 1988; Cousins, 1991; Zusman, 1992).

Blakely and Page (2001) compared critically ill patients whose pain was treated with those who were not treated for pain and found that the latter showed increases in stress hormones and catecholamine. When pain is not relieved following surgery, it has been found that heart rate, vascular resistance and level of catecholamine increase and these physiological effects put the patient at greater risk of complications which include bleeding, stroke and myocardial ischemia (Brennan, et al., 2007a). Unrelieved acute pain can also result in tachycardia, hypertension, the need for more oxygen, and a decrease in tissue perfusion (Blakely & Page, 2001; Carr et al., 1992; MacIntyre, 2005). Numerous body systems are stressed by untreated pain, with detrimental effects on the cardiovascular, endocrine, neurological, musculoskeletal, and immune systems (Siddall & Cousins, 2004; Tennant, 2004). Unrelieved pain in critical and acute patients increases postoperative complications, and longer stays in hospital (Tennant, 2004). Siddall and Cousins (2004) found that pain, when allowed to persist untreated, causes changes in the nervous system that may result in permanent, persistent pain of a different nature than the original nociceptive or inflammatory pain. Further research confirms that changes in neural mechanisms can produce sensitisation of peripheral and central neuronal pathways, with the resulting alterations evolving into chronic pain conditions: this maladaptive response to pain that is allowed to persist untreated can have a detrimental effect on health and quality of life (Basbaum, et al., 2009; Cousins, 2012; Lynch et al., 2008; Woolf, 2010).

Other maladaptive physical responses to chronic pain include physical changes such as the decreased ability to move, loss of muscle strength, insomnia, suppression of the immune system and increased vulnerability to infection and disease (Brennan & Cousins, 2004; Siddall & Cousins, 2004). A study conducted by the World Health Organization (Gureje, Von Korff, Simon, & Gater, 1998) found that the psychological effects of chronic pain include a four times greater likelihood for anxiety or depression in chronic pain sufferers compared to those without pain. Other research has produced similar findings, citing chronic pain as a predictor for both depression and anxiety (Fischer-Kern, Kapusta, Doering, Hörz, Mikutta, & Aigner,

2011; Fishbain, 1999; Ho, Li, Ng, Tsui, & Ng, 2011; Linder & Svensson, 2007; Merskey et al., 1987; Reme, Tangen, Moe, & Eriksen, 2011). Those who suffer from chronic pain, including persistent cancer pain, have been found to have decreased appetite, as well as difficulty sleeping and social interaction compare with those who have their pain relieved (Brennan, et al., 2007a; Ferrell, Grant, Chan, Ahn, & Ferrell, 1995). In addition, chronic pain sufferers are likely to have breakthrough pain, which is acute, severe, and must be recognised as having different quality and intensity than their chronic pain and must be treated as such (Caraceni, Martini, Zecca, Portenoy, Ashby, & Hawson, 2004; Chou et al., 2009; Ferrell, et al., 1995; Greco, Corli, Montanari, Deandrea, Zagonel, & Apolone, 2011; Pasero & McCaffery, 1999).

Thus, ongoing or recurring chronic pain has physical, psychological, and social consequences for the patient and family (Brennan & Cousins, 2004; Cousins, 2012; Siddall & Cousins, 2004). Undertreated pain and untreated pain have detrimental and sometimes devastating effects on health, well-being and overall quality of life (Cousins, 2012; Cousins & Lynch, 2011; McCarberg, Nicholson, Todd, Palmer, & Penles, 2008). In fact, pain – particularly chronic pain – can be a disease in itself (Langley, Müller-Schwerfe, Nicolaou, Liedgens, Pergolizzi, & Varrassi, 2010; Langley, 2011, 2012; Mick et al., 2013; Siddall & Cousins, 2004).

Numerous pain specialists have concluded that we must not allow treatable pain to persist when the means to relieve it are at hand (Berben, et al., 2008; Berben, et al., 2012; Berben, Schoonhoven, Meijjs, Van Vugt, & Van Grunsven, 2011; Brennan, et al., 2007a; Cousins, 2012; Cousins & Lynch, 2011). With the role of nurses in providing pain management well established (Berben, et al., 2008; Berben, et al., 2012), the present research project contributes to the fulfilment of the ethical and professional responsibility of nurses: to do whatever we can to relieve patients' suffering.

2.2 Pain Management

Pain management is widely discussed in the literature (Zoëga, Gunnarsdottir, Wilson, & Gordon, 2014). It is evident that there is a common understanding of what constitutes, pain management in hospital settings and in the ED (Greco, Roberto,

Corli, Deandrea, Bandieri, Cavuto, & Apolone, 2014; Guéant, Taleb, Borel-Kühner, Cauterman, Raphael, Nathan, & Ricard-Hibon, 2011; Zoëga, et al., 2014). Many studies refer to optimal pain management or quality pain management but there are few explicit definitions of these. A search of the literature located two explicit definitions of quality pain management and no explicit definitions of optimal pain management (Gordon, Pellino, Miaskowski, McNeill, Paice, Laferriere, & Bookbinder, 2002; Zoëga, et al., 2014). According to Gordon et al. (2002), quality pain management comprises:

...appropriate assessment (e.g., screening for the presence of pain, completion of a comprehensive initial assessment when pain is present, frequent reassessments of patients' responses to treatment); interdisciplinary, collaborative care planning that includes patient input; appropriate treatment that is efficacious, cost conscious, culturally and developmentally appropriate, and safe; and access to specialty care as needed. (Gordon, et al., 2002, p. 118)

More recently, concept evaluation by Zoëga et al. (2014) resulted in a definition of quality pain management for adults patients in the hospital setting, as follows:

...a multifaceted concept relating to the structure, process, and outcomes of care, consisting of organizationally supported evidence-based policies, competent staff that work efficiently together, interprofessional and specialized care or referral to meet the needs of the patient population being served, and staff accountability; screening, assessment, reassessment and communication of pain and its treatment, patient and family education, and individualized and evidence-based treatment embedded in safe, effective, patient-centered, timely, efficient, and equitable services; resulting in reduced pain severity and functional interference, decreased prevalence and severity of adverse consequences from pain or pain treatment, and increase in patient satisfaction with pain management (Zoëga, et al., 2014, p. 7).

The concepts of quality pain management and optimal pain management are considered equivalent. The term optimal pain management is employed in this thesis. In the ED, addressing a patient's pain is considered one of the most important aspects of care provision (Stalnikowicz, Mahamid, Kaspi, & Brezis, 2005; Thomas, 2013) and thus the concept of optimal pain management is a significant one in this setting. Optimal pain management resulting in pain relief is an achievable goal: moreover, this aspect of best practice is of considerable importance to individual patients and to their families (Thomas, 2013).

The following sections present discussions of the literature related to pain management as a fundamental aspect of patient care, the role of the RN in ED pain management, nurses' triage and assessment roles in the ED, and the prevalence of pain in the ED, all of which provide context for the present research project.

2.2.1 Pain Management as a Fundamental Aspect of Nursing Care

Nurses have a significant role in pain management because “[a]s patient advocates who spend more time with patients than any other provider, nurses have an opportunity to enhance patient care and abolish the status of pain as an ‘undertreated symptom’” (Wilson, 2014, p. 503). That is, because of the nature of their practice, nurses are in an excellent position to contribute to optimal pain management (Martorella, Côté, & Choinière, 2008; Wilson, 2014). Numerous nursing scholars have advocated for this crucial role of nurses within pain management over at least four decades (Ferrell, Eberts, McCaffery, & Grant, 1991; Ferrell & McCaffery, 2012; McCaffery, 1968; McCaffery & Ferrell, 1997; McCaffery & Hart, 1976). The textbook *Pain: A Clinical Manual* (McCaffery & Pasero, 1999) noted that a nurse's core values include the ethical obligation to relieve a patient's pain. Nursing education teaches that the patient's pain report must be respected and that the patient himself or herself is the best judge of the quality and intensity of their pain (Alspach, 2010; Pasero & McCaffery, 2011; Wells, Pasero, & McCaffery, 2008).

Among healthcare providers, it is nurses who typically spend the most time with patients in pain (Thomas, 2011). Not only do nurses administer analgesics and other pain-relieving interventions, but they also tailor these interventions for the individual patient's needs, and assess and monitor their effectiveness for that patient (Wells, et

al., 2008). The “cornerstones of practice for nurses involved in pain management” are pain assessment, pain monitoring, and evaluation of pain (Pellino, Willens, Polomano, & Heye, 2002, p. 13). These crucial nursing tasks are difficult and uncertain enterprises (de C Williams, 2002b). Each individual’s pain is ultimately something private and personal: only the pain sufferer can truly know the quality and intensity of his or her own pain (Alspach, 2010; Pasero & McCaffery, 2011; Wells, et al., 2008). Nurses must be able to quantify the pain intensity and qualify the nature of the patient’s pain experience, but pain perception and pain expression are phenomena with myriad layers of complexity, and there are a plethora of human responses to the pain and suffering, which can confound the interactions of nurses with their patients who have pain (de C Williams, 2002b). Given that one of the core nursing values is the relief of patients’ suffering, this poses a basic and crucial dilemma (Wells, et al., 2008).

Preeminent pain scholar Margo McCaffery addressed these challenges nearly a half century ago, with her insightful definition of pain as “whatever the person experiencing the pain says it is, existing whenever the person says it does” (McCaffery, 1968, p. 95) This definition has stood the test of time. It remains the “gold standard” for pain assessment (Alspach, 2010, p. 11; Pasero & McCaffery, 2011, p. 21):

The gold standard for assessing the existence and intensity of pain is patients’ self-reports. No other source of information has ever been shown to be more accurate or reliable than what a patient says. Patients’ behaviors, the opinions of nurses and physicians delivering care, patients’ vital signs – none of these is as reliable as patients’ reports of pain and should never be used instead of what a patient says. (Pasero & McCaffery, 2011, p. 21).

McCaffery’s intuitive understanding of pain viewed from a compassionate nursing perspective remains compatible with what is currently understood about pain, which is that it is a subjective experience and its level and effect must be reported by the patient him/herself (Alspach, 2010; American Pain Society, 2009; Katz & Tripp, 2014; Pasero & McCaffery, 2011). The concept of the patient’s self-report should have primacy within nursing as Alspach (2010) recently noted:

...other factors outside the patient's awareness, invisible to the nurse's observations, and not monitored in existing measurement devices may substantially enhance or diminish a patient's pain experience. When in doubt or bereft of hard data, critical care nurses should look to the patient first, last, and always give him/her the benefit of the doubt. (Alspach, 2010, p. 15)

Respect for patient self-report is thus part of best practice in pain management and of ethical nursing practice. The International Council of Nurses notes that nurses have a professional responsibility to support patients' health and well-being by providing them with safe, competent and ethical care (International Council of Nurses, 2013). Nursing ethics are based on such values as confidentiality, dignity, choice, justice and accountability (Bergman & Diamond, 2013; Fiester, 2013; International Council of Nurses, 2006; McGrath & Phillips, 2009). Within nursing, the ethical principles of beneficence and non-maleficence are considered guiding principles; therefore, the provision of both pain relief and comfort are obligations within the nursing profession (American Society for Pain Management Nursing, 2006; Drew, Gordon, Renner, Morgan, Swensen, & Manworren, 2014).

When pain is not relieved, or is relieved inadequately, there are damaging effects on patients' health: the patient's quality of life is affected, and patient outcomes are adversely affected (Blondal & Halldorsdottir, 2009; Dunwoody, Krenzischek, Pasero, Rathmell, & Polomano, 2008; Henschke, Kamper, & Maher, 2015; International Association for the Study of Pain, 2010a, 2010b, 2015; Riva, Wirth, & Williams, 2011). Therefore the way nurses assess and diagnose patients with pain, and how nurses intervene to manage pain, has a profound impact on patients' health (Blondal & Halldorsdottir, 2009; Ducharme, 2005; Ducharme, Tanabe, Homel, Miner, Chang, Lee, & Todd, 2008; Ferrell, 2005; Henschke, et al., 2015). Nursing today continues to be guided by the Primary Health Care Model, as set out by the World Health Organization nearly four decades ago, which stated that: "Primary health care is essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible" (World Health Organization, 1978, p. 16). Among the core values within this model (among others) is the relief of suffering (World Health Organization, 1978). When

considering the role of the RN in managing pain, these precepts are particularly relevant and resonant. In keeping with the Primary Health Care Model and with nursing's core values, RNs are presumed to have both a caring attitude toward patients and sufficient pain knowledge to provide effective pain relief for their patients (International Association for the Study of Pain, 2010a; International Council of Nurses, 2013; Pizzo & Clark, 2012).

2.2.2 Role of the Registered Nurse in Emergency Department

Pain Management

Pain management is part of the RN's scope of practice and RNs have a central role in pain management (Buckley, 2014; Gleichgerricht & Decety, 2014; International Council of Nurses, 2013; Irish Nurses and Midwives Organisation, 2014). This unique and essential role arises because it is the nurse who spends the most time with the patient in pain: more, in fact, than any of the other healthcare providers who interact with the patient (Thomas, 2011). The Pain Management Task Force Final Report (Thomas, 2011) presents an idealised view of the role of the nurse in pain management:

Nurses comprise the largest health care profession and have been the traditional bearers of the patient advocacy torch. Pain is the most frequently used nursing diagnosis in all delivery of care models, and the assessment and management of pain is significant to every professional registered nurse. Their unique qualifications and relationships with patients make nurses an essential component of any pain management strategy. Nurses provide hospitals and patients with a capable, professional workforce adept at measuring, monitoring, evaluating, and documenting pain interventions and outcomes. (Thomas, 2011, p. 17)

However, as noted in the discussion below, research reveals that nurses' pain management practice does not always conform to nursing's mission statements.

The domains of registered nursing relevant to the present research project include ethics, accountability and clinical practice, within which RNs have the fundamental

role of providing patient care using a variety of processes, including assessment, diagnosis, planning, implementation and evaluation (Rich, 2000a, 2000b). RNs should draw on their knowledge and experience to deliver appropriate patient care, by employing critical thinking skills and by using evidence-based judgment (ASPMN, 2012). They are expected to fulfil their role in pain management on the general understanding that they have been educated and retain competence in pain management through the administration of analgesics in appropriate dosages as well as the provision of other pain relief measures (ASPMN, 2012).

Helms and Barone (2008) note that for nurses to provide optimal pain management, they must understand pain physiology, pain types, pain control methods and the different ways patients' responses can affect pain assessment and treatment. Because nurses' education and training includes at least the fundamentals of these areas of knowledge, RNs should be capable of fulfilling their nursing roles with respect to patients with pain. These roles include responsibility for assessing and managing pain, educating patients and their families about pain, collaborating with physicians and pharmacists in the planning and implementation of analgesia, monitoring patient response to pain treatment and ensuring patient safety and comfort (Affara, 2009; Polomano, Dunwoody, Krenzischek, & Rathmell, 2008). In addition, in most nursing curricula it is also impressed upon students that optimal pain management is essential for good patient outcomes (and that patient outcomes are also known to be adversely affected by inadequate pain management) thus pain control is an important part of the overall management plan for the patient and RN protocols involving the initiation of analgesic administration may improve pain outcomes for patients (International Association for the Study of Pain, 2011a; Pretorius, Searle, & Marshall, 2015; Vazirani & Knott, 2012).

Thus, there are important reasons for the RN to prioritise pain management in the ED. It is important from an ethical perspective to ensure that pain is assessed and managed to relieve the patient's suffering; also, timely pain treatment ensures better outcomes since it is known that undertreated or untreated pain has consequences in terms of poorer patient outcomes (Berben, et al., 2008; Berben, et al., 2012; Blakely & Page, 2001; Brennan, et al., 2007a; Cousins, 2012; Tennant, 2004). When acute pain persists and goes untreated, many bodily systems are affected including the

neurologic, cardiovascular, endocrine, immune and musculoskeletal systems (Tennant, 2004). In addition, patients have been found to be more likely to develop complications, including chronic pain; they may also have longer stays in hospital (Gibson, 2007; Pines & Hollander, 2008; Wheeler, Hardie, Klemm, Akanji, Schonewolf, Scott, & Sterling, 2010). They may experience delays in becoming ambulatory, and especially in older ED patients, could suffer from delirium (Hwang & Platts-Mills, 2013).

Once the patient's pain has been assessed, there are numerous analgesic options for which RNs are typically responsible with respect to the management of pain in the ED. Many condition-specific protocols for analgesic administration are relatively straightforward and easy to administer, with some options for a range of administration routes (MacIntyre, 2005). These include regionally and locally administered analgesics (local anaesthetics), opioids (neuraxial and peripheral), adjuvant drugs such as adrenaline and ketamine, anti-inflammatory drugs including corticosteroids and non-steroidal anti-inflammatory medications (NSAIDs) (MacIntyre, 2005). Administration routes include intravenous, intramuscular, oral, rectal, transdermal and transmucosal; additionally, patient-controlled analgesia, epidural analgesia, neuraxial blockade and peripheral nerve blockage (among other techniques) are available (Curtis, Henriques, Fanciullo, Reynolds, & Suber, 2007; Curtis, Zou, Morris, & Black, 2006; MacIntyre, 2005; Pasero et al., 2009).

Among the non-pharmacological interventions available are physical therapies such as acupuncture, transcutaneous electrical stimulation of nerves, massage and other touch therapies, or the application of cold and heat. Psychological interventions include teaching of attentional techniques, the reduction of tension and stress, cognitive-behavioural interventions and providing information (Bounes, Jouanjus, Roussin, & Lapeyre-Mestre, 2014; Glassberg, Tanabe, Chow, Harper, Haywood Jr, DeBaun, & Richardson, 2013; Hurley, Adams, & Benzon, 2013; Mathiesen, Thomsen, Kitter, Dahl, & Kehlet, 2012; Muntlin, Carlsson, Säfwenberg, & Gunningberg, 2011; Radson, 2011; Stauber, 2013). However, the ED setting is not always conducive to the use of such techniques, in particular those that are intensive of labour or time, often because of challenges such as ED crowding, understaffing

and patient acuity (Buckley, 2014; DeVivo, et al., 2013; MacIntyre, 2005; Mackey, 2014; Wentzel & Brysiewicz, 2014).

Some of the elements that have been cited in the nursing literature as important for high-quality pain management in the ED include timely pain assessment at triage; choosing analgesia according to patient-specific criteria, risks and preferences; and frequent reassessment of pain followed by adjustment of treatments as appropriate (Hwang & Platts-Mills, 2013). To manage pain in the ED optimally requires a host of steps to be taken and protocols to be in place (Castner, Grinslade, Guay, Hettinger, Seo, & Boris, 2013; Duignan & Dunn, 2008b; Fosnocht & Swanson, 2007; Givens, Rutherford, Joshi, & Delaney, 2007; Lee, Smith, & Jennings, 2008). As described above, patients must be expeditiously and thoroughly assessed for the presence of pain using reliable and valid tools or pain scales; a thorough medical history must be taken, along with a pain history; pain character, type and intensity must be evaluated; functional impacts must be assessed; treatment options including analgesia and non-pharmacological options must be considered; and side effects of treatment must be taken into account (Bhakta & Marco, 2014; Bounes, et al., 2014; Glassberg, et al., 2013; Gordon et al., 2005; Hwang & Platts-Mills, 2013; MacIntyre, 2005; McLeod & Nelson, 2013; Zeitoun, Dimassi, Chami, & Chamoun, 2013). There must be a timely re-assessment of the pain and ongoing re-assessments, with necessary adjustments in medication and other treatments according to indications from subsequent reassessments. In addition, thorough documentation of all action taken must be completed (Gordon, et al., 2005; MacIntyre, 2005).

2.2.3 Role of the Registered Nurse in Triage & Pain Assessment

Triage is the first step in pain management in the ED (McLeod & Nelson, 2013). (Gordon, et al., 2005; MacIntyre, 2005). Triage is the process of sorting ED patients in order of need for medical care, without regard to their order of arrival or other factors such as gender, age, nationality, ethnicity, religion or their status with regard to socioeconomic factors and (in countries where this is a factor) whether they have insurance (Bible, 2006). Triage involves an assessment, typically performed by an RN, to prioritise ED patients who are in need of immediate care, according to the clinical severity and urgency of their condition (Qureshi, 2010).

The triage assessment should ideally account not only for acuity but also for the level of pain and pain type, since not only patients with acute pain but also many with chronic and neuropathic pain seek treatment at the ED (Lecomte, et al., 2011; Todd, 2008; Wilsey, Fishman, Crandall, Casamalhuapa, & Bertakis, 2008a; Wilsey, Fishman, Ogden, Tsodikov, & Bertakis, 2008b). Specific nursing protocols for assessment of acute pain in the ED are recommended because of the high-intensity environment where overcrowding may be an issue and rapid action is often necessary both medically and practically (Ducharme, et al., 2008).

Nurses face considerable challenges in performing such pain assessments. While numerous validated tools such as numeric pain scores are available for nurses to use in performing subjective assessments of pain, medical science has not yet discovered any objective tests that can reliably and definitively determine the presence of pain, nor to measure its intensity (Bogdanov et al., 2015; Davis, 2011; Lynn, Demanet, Krebs, Van Dessel, & Brass, 2014; Martucci, Ng, & MacKey, 2014; Wager, Atlas, Lindquist, Roy, Woo, & Kross, 2013; Wiech, Edwards, Moseley, Berna, Ploner, & Tracey, 2014). There is new research investigating the possibility at some future point of identifying neurologic signatures of pain in the human brain with neuroimaging (Davis, 2011; Martucci, et al., 2014), functional magnetic resonance imaging (Wager, et al., 2013), micro-positron emission tomography (Kim, Kim, Chung, Im, Lee, Kim, & Kim, 2014), and arterial spin labeling (O'Muircheartaigh et al., 2015). However, as Wager, et al. (2013) note, "Functional magnetic resonance imaging (fMRI) holds promise for identifying objective measures of pain, but brain measures that are sensitive and specific to physical pain have not yet been identified" (p. 1388). Nurses' pain assessments at present must therefore continue to be based on the subjective criterion of patient self-report; that is, on subjective measures. The role of RNs in conducting timely and thorough pain assessments according to best practice, and the accuracy of such assessments, is thus key to high-quality pain management (American Pain Society, 2009; Arbour, Choinière, Topolovec-Vranic, Loiselle, & Gélinas, 2014; Barker, Spence, & Wilson, 2014; Bhakta & Marco, 2014; Chen & Chen, 2014; Colloca et al., 2015; Gordon, et al., 2005; Joshi et al., 2014; Nissen & Dunford, 2014; Pasero & McCaffery, 2011; Patrick, Cleeland, Von Moos, Fallowfield, Wei, Öhrling, & Qian, 2014; Paulson, Monroe, & Mion, 2014; Zeitoun, et al., 2013).

The role of the RN in pain assessment begins with identification of pain, and continues with assessment of the type and severity of the pain: this is the “assessment of need” (Ogston-Tuck, 2012, p. 513). As Bible notes, “pain assessment at triage is paramount in good patient care” (p. 29). Tools for pain assessment in the ED include those which can be used with conscious patients who are verbal, such as visual analogue scales, verbal pain scores, and numeric rating scales (Breivik et al, 2008). Adjective response scales consist of ranked adjectives to describe pain, such as “none,” “slight,” “moderate,” “severe,” and “agonizing” (Bullard et al., 2008). Tools are also available for assessing pain in unconscious and nonverbal patients (e.g. the critically ill the severely developmentally disabled, the elderly with dementia, infants, preverbal young children, or those in critical care (e.g. unconscious/intubated) (Marmo & Fowler, 2010). These include the Critical-Care Pain Observation Tool, the Payen Behavioural Pain Scale, and the Faces, Legs, Activity, Cry, and Consolability Scale (Herr, Coyne, McCaffery, Manworren, & Merkel, 2011). In KSA, an adjective rating scale is also sometimes used, for example as noted in Rehmani (2010).

Pain scales in general use have typically been subjected to extensive review of their psychometric properties, interpretability and feasibility. Evaluations of pain scales in the ED have indicated that their use significantly increased analgesia recommendations and reduced the time to administration of analgesia. For example, Silka et al. (2004) found that the use of verbal pain scores improved the ability of clinicians to assess and manage pain in patients given opioids, upon re-assessment. Silka et al. (2004) concluded that the use of the standardised pain assessment and the training of ED nurses in the use of verbal pain scores may reduce caregiver bias in pain assessment and treatment thus removing potential barriers to high-quality pain management practices in the ED. Stalnikowicz et al. (2005) similarly noted improved pain assessment and improved pain management in the ED with the introduction of a visual analogue pain scale. Harrison (1993) investigated pain assessment in the ED in Kuwait using a visual analogue scale adapted for use by Arab patients, (who read from right to left), and a Mood Scale for paediatric patients. Similar to Stalnikowicz et al. (2005) and Silka et al. (2004), Harrison (1993) found that pain undertreatment in the ED was related to inadequate assessment of patients’ pain but there was an

improvement in pain management with the introduction of routine pain assessment and recording.

Triage decision making has been investigated in an effort to understand its relationship to pain undertreatment. Its complexity, however, makes it difficult to relate specific changes in triage protocols to improvements in pain management, and more research is needed (Ducharme, et al., 2008; Fosnocht & Swanson, 2007; Goransson, Ehnfors, Fonteyn, & Ehrenberg, 2008; Singer, Garra, Chohan, Dalmedo, & Thode Jr, 2008). Some studies have investigated the use of nurse-based pain protocols, with mixed results (Pretorius, et al., 2015). Standing orders for opioids within nurse-initiated protocol structures has been shown in some research studies to result in improved analgesic delivery and reduced patient waiting times to analgesia (Stalnikowicz, et al., 2005). It had been noted in a US study (Baumann, Holmes, Chansky, Levey, Kulkarni, & Boudreaux, 2007) that introducing a templated chart improved documentation but had no substantial effect in improved pain patient care. A recent Australian study (Vazirani & Knott, 2012) similarly showed that nurse-based pain protocols at triage did not change the frequency of analgesic administration. However, Vazirani and Knott (2012) did find mandatory pain scoring at triage to be associated with somewhat shorter median time to analgesia: from a baseline median time of 123 minutes to 95 minutes after the introduction of mandatory pain scoring. As well, nurse-initiated pain protocols were perceived by 97% of respondents in a New Zealand study (Pretorius, et al., 2015) to be enablers of improved pain management in the ED, with 70% of those respondents stating that they followed such protocols. Additional research may help to clarify the extent to which nurse-based pain protocols at triage may be associated with improved patient care.

Bible (2006) and Teanby (2003) both found poor pain assessment and management at triage. Harrison's study (1993), showed that when pain assessment by both nurses and doctors were compared, nurses underestimated patients' pain more than physicians. These results were supported by Stalnikowicz et al. (2005), who also found correlations between poor pain management in the ED and inadequate pain assessments. Results of their intervention study based in Israel suggested that pain management may be improved by implementing nurse-based pain protocols

(Stalnikowicz, et al., 2005). In the Saudi Arabian ED setting, Rehmani (2010) reported on the use of both numerical and adjective response pain scales in a single-site retrospective cohort study. Rehmani (2010) found that timely pain assessment was affected by gender, with female patients more likely to be assigned a low triage level by nurses. In addition, a lack of published guidelines about pain assessment, as well as a lack of pain assessment education for nurses whose task it was to perform the pain assessments contributed to inadequate pain assessment (Rehmani, 2010).

Nurses have been found to have a surprising number and range of negative attitudes towards and beliefs about the use of pain assessment tools (Young, Horton, & Davidhizar, 2006), consistent with McCaffery & Pasero (1999) who have noted that attitudes and beliefs are difficult to overcome and resistant to change. Some research has shown the underutilisation of pain tools to be related to negative attitudes (Tsai et al. 2007). Young & Davidhizar (2008) indicate that unsatisfactory pain management in the emergency setting may be related to the absence of a pain assessment tool, or the application of assessment tools that are not appropriate to the patient's specific circumstances and medical status. This reflects knowledge issues and also, lack of knowledge of appropriate tools.

The results of investigations of the use of pain assessment tools in the ED point to the importance of defining guidelines and protocols for the use of ED-appropriate pain assessment tools to contribute to effective pain management in the ED, as well as to the complexity of the problem of ensuring high quality pain assessment even with standardised pain assessment tools and protocols. RNs not only perform this initial pain assessment at triage, but subsequently administer specifically prescribed pain medications, to interpret and manage *pro re nata* (also known as PRN or 'as-needed') orders, and to monitor the patient through comprehensive, ongoing pain assessments (McLeod & Nelson, 2013; Ogston-Tuck, 2012).

2.2.4 Prevalence of Pain in the Emergency Department

In the ED, the high prevalence of pain is one of the many interconnected factors that affect nursing practice and is a concerning and complicating part of the overall setting (International Association for the Study of Pain, 2011a). Researchers have investigated pain prevalence in the ED in Canada (Johnston, Gagnon, Fullerton,

Common, Ladores, & Forlini, 1998), the US (Chang, et al., 2014; Cordell, Keene, Giles, Jones, Jones, & Brizendine, 2002; Tanabe & Buschmann, 1999), both Canada and the US combined in a multi-centre study (Todd, et al., 2007), France (Tcherny-Lessenot, Karwowski-Soulie, Lamarche-Vadel, Ginsburg, Brunet, & Vidal-Trecan, 2003; Yvert & Lafon, 2012), the Netherlands (Berben, et al., 2008) and Spain (Caurín, Armero, Arias, Fernández, Trenchs, & Luaces Cubells, 2012).

Retrospective studies investigating pain prevalence in the ED employ secondary analysis of data from patient charts as well as clinical and management databases (Chang, et al., 2014; Cordell, et al., 2002). Whether there was a notation of pain in a patients' charts depended both on whether RNs had performed pain assessment (Chang, et al., 2014) and whether they had recorded the results of an assessment (Cordell, et al., 2002). Cordell et al. (2002) indicated a pain prevalence of 61% at the single site they studied, which they note may be an underestimate due to a lack of consistency in recorded pain assessments. Chang et al. (2014) reviewed ED records from 2000 to 2010 in a large retrospective, multi-site study and found a pain prevalence of 45.4%, based on a diagnosis of pain or pain as a primary symptom. However, these authors noted patients reported pain as the primary reason for attendance to the ED at twice the rate at which physicians diagnosed pain as a primary symptom (Chang, et al., 2014). Another significant finding was that rates of severe pain rose between 2003 and 2008, from 25% to 40% . This is consistent with reports that pain prevalence, both in the ED and elsewhere, is on the increase globally (International Association for the Study of Pain, 2011). This issue is discussed in detail in a subsequent section.

In prospective pain prevalence studies, patients are interviewed at the time pain is occurring (Cordell, et al., 2002), although these prospective study designs also result in underestimates of pain prevalence since they necessarily exclude – on both medical and ethical grounds – patients who are critical (Johnston, et al., 1998). Nevertheless, prospective studies still report very high pain prevalences. In a large urban hospital in Canada, period prevalence of pain in the ED over the one-week study period was 81% among patients presenting to the ED, excluding critical cases (Johnston, et al., 1998). Another single-site, prospective study in the US which also excluded critical cases reported pain prevalence at 78% over the study period

(Tanabe & Buschmann, 1999). Pain prevalence in a French prospective study was found to be 78% over the 16-day study period in a single ED, with 54% of patients reporting their pain was 'intense' (Tcherny-Lessenot, et al., 2003). A large observational, prospective, cohort study of patients (n=842) who attended the ED in 20 hospitals (of which 17 were in the United States, with the rest in Canada) noted that 70% of those who presented to the ED reported moderate to severe pain (Todd, et al., 2007). Patients with no pain or mild pain, as well as critical patients were excluded and therefore pain prevalence for all pain types in the ED was not measured in this study. In a study conducted on pain prevalence in the ED in the Netherlands, Berben et al. (2008) found that 70% of ED patients reported pain, only 2% reported no pain, with missing pain reports for 28% of patients.

Chronic pain and neuropathic pain prevalence have been understudied in the ED to date, although two French studies were found to have investigated these. In addition to overall pain prevalence, Tcherny-Lessenot et al. (2003) recorded the prevalence of chronic pain at 13% amongst ED patients over the study period. The prevalence of neuropathic pain in the ED over a 2-week period was investigated in an ED in France (Lecomte, et al., 2011). This type of pain is time-consuming and difficult to diagnose; since the appropriate tool for detecting neuropathic pain at triage did not exist, the researchers developed a specific tool, the DN4, for this purpose (Lecomte, et al., 2011). Their results indicated a neuropathic pain prevalence of 21.4% amongst those who presented to the ED with pain (Lecomte, et al., 2011). This study is the only one found to have studied neuropathic pain prevalence in the ED to date. These results point to a need for further investigation, particularly since one of the prominent issues associated with neuropathic pain is that it does not have clinical manifestations and this has been associated with undertreatment (Haanpää, et al., 2009; Helms & Barone, 2008; International Association for the Study of Pain, 2015; Lecomte, et al., 2011).

In prospective studies that assessed pain at discharge from the ED, findings indicated that many patients reported untreated and undertreated pain as well as increased pain at discharge, compared with admission (Johnston, et al., 1998; Todd, et al., 2007). It was found also that pain intensities were high, analgesia was underutilised, there were lengthy delays before pain treatment (if any) began; moreover, while pain

assessments were performed in a substantial majority of cases (>80%), reassessments were found to be relatively rare (Berben, et al., 2008; Johnston, et al., 1998; Tanabe & Buschmann, 1999; Todd, et al., 2007).

Despite the recognised limitations of both prospective and retrospective pain prevalence studies, the small body of research investigating overall pain prevalence in the ED and the dearth of chronic and neuropathic pain prevalence research, the findings of these studies underscore pain as a highly significant feature of ED presentation. Two aspects of RNs' practice therefore coincide with respect to this high pain prevalence in the ED. One is that, as discussed above, RNs have a large and important role in pain management in the ED; the other is that both substantial knowledge and a compassionate perspective underpin that nursing role.

Since it is known that a substantial majority of patients who attend the ED have pain, nurses' knowledge and attitudes regarding pain influence the extent to which these patients' pain is optimally managed. The large body of research investigating these interrelated factors attests to the acknowledged importance of both knowledge and attitudes in influencing patient outcomes in pain management nursing.

2.3 Knowledge and Attitudes Regarding Pain

There is an extensive literature on nurses' knowledge and attitudes regarding pain; the tool most widely used by researchers in this subject area is the Knowledge and Attitudes Survey Regarding Pain (KASRP), which authors Ferrell and McCaffery note has been validated and "measures both knowledge and attitudes" (2012, p. 1). In the literature search conducted for this research project it was found that there is a lack of operational definitions for knowledge and for attitudes in the literature. This suggests that researchers assume a general understanding of what is meant by nursing knowledge and nursing attitudes. This presumably shared understanding of what nurse's knowledge and attitudes are may be inferred from the clear consensus that knowledge and attitudes can be measured and that these affect nursing practice in terms of appropriate and effective control of pain (Ferrell & McCaffery, 2012; Ferrell, Virani, Grant, Vallerand, & McCaffery, 2000; Matthews & Malcolm, 2007;

McCaffery & Pasero, 1999; McCaffery & Robinson, 2002; Pasero, McCaffery, & Gordon, 1999a; Zanolin, Visentin, Trentin, Saiani, Brugnolli, & Grassi, 2007).

2.3.1 Definitions of Nursing Knowledge

The importance of nurses having accurate knowledge of pain based on the best evidence has been established as key to optimal pain management (McCaffery & Ferrell, 1997; Wilson, 2014). Yet a thorough search of the literature, did not find operational definitions of either knowledge or attitude in the many studies using the KASRP and other similar tools to investigate nursing knowledge and attitudes. Both these terms are admittedly difficult to define: scholars generally define ‘nursing knowledge’ using the terms ‘knowledge’ or ‘know’. This strategy, unfortunately, relies upon an assumption of a shared understanding and does not further an actual understanding of how the term is used, applied or measured. For example, early in the development of the KASRP tool, co-author McCaffery noted:

Any study of nurses' knowledge of pain management is based on assumptions about *what nurses should know* to provide a high quality of care for patients with pain. [...] Thus, nursing activities related to pain management are numerous, and *considerable knowledge is required*. It is, therefore, challenging to identify only a few specific items of information that all nurses caring for patients with pain should possess. [emphasis added] (McCaffery & Ferrell, 1997, p. 176)

Similarly, in an article entitled *Defining Nursing Knowledge*, Hall (2005) defined nursing knowledge as “what improves care if the nurse is aware of the best *knowledge* or evidence to use in practice” [emphasis added] (p. 34). However, Hall (2005) offers some interesting analysis about the relationship between what scholars describe as nursing knowledge and what they suggest to be nurses’ attitudes. It seems that this relationship may be rooted in the ways nurses expect to teach as well as learn from their colleagues:

“... it is clear that the culture and accepted practices and beliefs of nursing in practice play a profound role in shaping what nurses describe as knowledge and in the way knowledge is disseminated. In

order to educate nurses and to establish and maintain ourselves as a profession we must try to identify what nursing knowledge is and express this. *In doing this it is important not to confuse opinion and beliefs with nursing knowledge* [emphasis added] (Hall, 2005, p. 34)

Because a search of the literature did not locate a previously-existing operational definition of nursing knowledge regarding pain that did not employ the term ‘knowledge’, the researcher developed the following operational definition based on a review of the relevant literature:

Nursing knowledge regarding pain is defined as the totality of evidence-based items of information about pain and facts about its optimal assessment, treatment and overall management as gathered by experts in the fields of pain and pain management, and which are the foundation for best practice.

2.3.2 Definitions of Nursing Attitudes

The value placed on nursing intuition as a way of developing knowledge, as noted above, may often lead nurses to assume that what they believe about pain and about patients in pain is correct when these beliefs may not in fact be evidence-based knowledge (Hall, 2005; Pasero, 2009; Pasero & McCaffery, 2011). However, combining nursing knowledge with erroneous beliefs may result in negative attitudes towards patients (Hall, 2005; Pasero, 2009; Pasero & McCaffery, 2011) and when the patients have pain, this is associated with inadequate pain management (Carr, 2009; Dihle, Bjølseth, & Helseth, 2006; Dunwoody, et al., 2008; Ferrell & McCaffery, 2012; Pasero, 2009; Pasero & McCaffery, 2011; Rupp & Delaney, 2004). The nursing literature has addressed nursing attitudes independently and also together with knowledge. However, as with knowledge, there is no apparent consensus definition of nursing attitude. The researcher developed the following definition of attitudes based on a literature search, and in particular was informed by the Associative-Propositional Theory (APE Theory) (Gawronski, 2007; Gawronski & Bodenhausen, 2007, 2014):

Nurses' attitudes regarding pain may be defined as the aspects or processes that are involved in positive or negative responses toward pain, pain management, and patients who report pain.

2.4 Nurses' Knowledge and Attitudes Regarding Pain

Nurses' knowledge and attitudes regarding pain are investigated together and independently. The general categories of necessary nursing knowledge as described in the literature are extensive. Nurses' knowledge of such topics is crucial to effective pain management (Dihle, et al., 2006; Ferrell & McCaffery, 2012; McCaffery & Pasero, 1999; McCaffery & Robinson, 2002; Pasero, 2009; Pasero & McCaffery, 2011; Pasero, et al., 2009). They include knowledge about the nature and physiology of pain and the various sub-types of pain, pain pathways, strategies for effective pain assessment and management, types of analgesia, dosages and possible side effects of analgesic medications and the way analgesics work (Dunwoody, et al., 2008; Ferrell, et al., 2000; McCaffery & Pasero, 1999; Moayed & Davis, 2013; Pasero, 2007, 2009; Pasero & McCaffery, 2011; Steeds, 2009; Wells, et al., 2008; Woolf, 2010). This knowledge substantially contributes to the way nurses perceive and interpret their management of pain. Nurses' attitudes tend to affect the way nurses interpret their patients' expressions of pain and to shape how they act upon the information patients give them; thus attitudes can have a substantial impact on pain management (Anderson et al., 2000; Broekmans, Vanderschueren, Morlion, Kumar, & Evers, 2004; Chow & Chan, 2015; Ferrell, 2005; Freiermuth et al., 2014; Glassberg, et al., 2013; Lovering, 2006; Pack-Mabien, Labbe, Herbert, & Haynes Jr, 2001; Sherwood, Adams-McNeill, Starck, Nieto, & Thompson, 2000; Young & Davidhizar, 2008; Young, et al., 2006).

2.4.1 The Knowledge and Attitudes Survey Regarding Pain

The literature investigating nurses' knowledge and attitudes about pain and pain management is dominated by studies that use a version of the KASRP tool created by Ferrell and McCaffery (2012). A large body of work has been developed around the fundamental work, primarily of these pain-specialist nursing scholars, McCaffery and Ferrell, in developing awareness of the role of knowledge and attitudes of nurses

in the provision of pain management and the necessity of providing optimal (high-quality) pain management to patients in pain (Ferrell & McCaffery, 2012; Ferrell, et al., 2000; McCaffery, Ferrell, & Pasero, 2000; McCaffery & Pasero, 1999; McCaffery & Robinson, 2002; Pasero & McCaffery, 2003, 2004, 2005; Pasero, et al., 1999a; Pasero, Paice, & McCaffery, 1999b; Wells, et al., 2008). Numerous nursing researchers have subsequently been influenced by the work of McCaffery and Ferrell, and perhaps in particular their Knowledge and Attitudes Survey Regarding Pain. This survey, known as the KASRP, has in turn generated a body of nursing research investigating the knowledge and attitudes towards pain and patients in pain, of nurses in many countries, including Australia (Heath, 1998; Van Niekerk & Martin, 2001), Canada (Brunier, Carson, & Harrison, 1995; Lewthwaite, Jabusch, Wheeler, Schnell-Hoehn, Mills, Estrella-Holder, & Fedorowicz, 2011), Greece (Tafas, Patiraki, McDonald, & Lemonidou, 2002), Hong Kong (Lui, So, & Fong, 2008; Tse & Chan, 2004), India (Nimbalkar, Dongara, Phatak, & Nimbalkar, 2012), Italy (Bernardi, Catania, Lambert, Tridello, & Luzzani, 2007; Catania et al., 2006), Jordan (Abdalahim, Majali, Stomberg, & Bergbom, 2011), Northern Ireland (Matthews & Malcolm, 2007), Taiwan (Lai et al., 2003; Tsai, Tsai, Chien, & Lin, 2007), Turkey (Yildirim, Cicek, & Uyar, 2008), the United Kingdom (Coulling, 2005; Erkes, Parker, Carr, & Mayo, 2001; Wilson, 2007) and the United States (US) (Ferrell & McCaffery, 2012; Ferrell, et al., 2000; McCaffery, et al., 2000; McCaffery & Pasero, 1999; McCaffery & Robinson, 2002; Pasero & McCaffery, 2003, 2004, 2005; Pasero, et al., 1999a; Pasero, et al., 1999b; Wells, et al., 2008), Canada (Heath, 1998; Van Niekerk & Martin, 2001), Greece (Brunier, et al., 1995; Lewthwaite, et al., 2011), Hong Kong (Tafas, et al., 2002), India (Lui, et al., 2008; Tse & Chan, 2004), Italy (Nimbalkar, et al., 2012), Jordan (Bernardi, et al., 2007; Catania, et al., 2006), Northern Ireland (Abdalahim, et al., 2011), Taiwan (Matthews & Malcolm, 2007), Turkey (Lai, et al., 2003; Tsai, et al., 2007), the United Kingdom (Yildirim, et al., 2008) and the United States (Brown, Bowman, & Eason, 1999; Clarke, French, Bilodeau, Capasso, Edwards, & Empoliti, 1996; Duke, Haas, Yarbrough, & Northam, 2013; Jarrett, Church, Fancher-Gonzalez, Shackelford, & Lofton, 2013; Manworren, 2001; Moceris & Drevdahl, 2014; Plaisance & Logan, 2006; Rushton, Eggett, & Sutherland, 2003; Vincent, 2005). This work based on Ferrell and McCaffery's KASRP has established a firm relationship, extensively discussed in the current literature, between the provision of satisfactory or unsatisfactory pain

management to patients and the satisfactory or unsatisfactory level of nurses' knowledge and attitudes regarding pain (Ferrell & McCaffery, 2012). Although there have been numerous studies conducted in various settings and countries around the world, as Grinstein-Cohen, Sarid, Attar, Pilpel, and Elhayany (2009) note, most have been undertaken in North America and Europe. Indeed, the KASRP was originally designed for use in the United States and has been used to study the widely recognised problem of pain and pain management in that country.

KASRP results are generally calibrated against a threshold level of 80%, which authors of the tool explain is an essential standard for nurses if the goal of optimal pain management is to be achieved (McCaffery & Robinson, 2002). That is, it is reasonable to insist that nurses possess a high level of knowledge and positive attitudes in order to be capable of providing optimal care to their patients with pain. As McCaffery and Robinson assert:

we've set 80% [...] as a passing score. This is based on asking, 'Is all of the information in these questions necessary for delivering safe and effective nursing care to children and adults with pain?' We feel that it is and that if a nurse misses more than [20% of] questions, her ability to care for a patient with pain is significantly compromised. (McCaffery & Robinson, 2002, p. 42)

A high level of knowledge and positive attitudes regarding pain are thus considered a key factor in optimal pain management based on best practice (Ferrell & McCaffery, 2012; Ferrell, et al., 2000; McCaffery, et al., 2000; McCaffery & Pasero, 1999; McCaffery & Robinson, 2002; Pasero & McCaffery, 2003, 2004, 2005, 2011; Pasero, et al., 1999a; Pasero, et al., 1999b; Wells, et al., 2008; Wilson, 2014; Zoëga, et al., 2014). Numerous studies have been undertaken to determine the extent to which nurses have knowledge and attitudes that are adequate for the fulfilment of their important role in providing optimal pain management to patients in pain.

2.4.2 Knowledge and Attitudes Regarding Pain: United States

Knowledge deficits and the role of negative attitudes and beliefs in undertreating pain have been noted in US studies (Brown, et al., 1999; Puntillo, Neighbor, O'Neil,

& Nixon, 2003; Tanabe & Buschmann, 1999). Research conducted by Vincent (2005) among paediatric nurses in the Midwestern US, featuring 33 knowledge and attitude items, found the mean total score (with standard deviations in parentheses) to be 25.3 (3.4) correct or 76.7% (10.3%) among the paediatric nurses studied. Another US study, by Duke, et al. (2013), found that students nearing graduation with a Baccalaureate degree achieved mean total KASRP scores that were, somewhat surprisingly, only slightly less than faculty members: 68% (6.8%) and 71% (13.0%), respectively. Similarly, another US study reported KASRP mean total scores at 69.3% (4.9%) among nurses caring for patients with post-operative pain (Francis & Fitzpatrick, 2012).

With respect to specific knowledge domains, Tanabe and Buschmann (1999, 2000) found a significant deficit of knowledge among the nurses surveyed on two domains, including their knowledge of analgesic principles and their understanding of the terms ‘addiction’, ‘tolerance’ and ‘dependence’. Higher scores were correlated with: master’s degree or PhD; and attendance at a day-long seminar on pain management (Tanabe & Buschmann, 1999, 2000). Knowledge also plays a pivotal role in determining nurses’ attitude towards patients with pain. Knowledge deficits that prevent pain from being optimally managed have been found to be present in acute care settings including the ED (Berben, et al., 2012; Mocerri & Drevdahl, 2014).

2.4.3 Knowledge and Attitudes Regarding Pain: Canada

An early study of Canadian nurses’ knowledge and attitudes regarding pain using the KASRP showed low levels of knowledge with a mean total score of 41%: they did not have adequate understanding of acute pain versus chronic pain; the basic principles of pain management; or the correct use of opioid analgesia (Brunier, et al., 1995). Much more recent Canadian research by Lewthwaite et al. (2009; 2011), however, found Canadian nurses to be among the best-informed of nurses whose knowledge and attitudes have been investigated using the KASRP: Lewthwaite et al. (2009) reported a mean total score of 79% on a modified KASRP amongst hospital nurses in Canada, with 49% of participants achieving a recommended minimum score of 80%. Areas of strength for these Canadian nurses included basic knowledge of pain medication administration and assessment of children’s pain. Although

overall scores were higher than those typically reported in the literature, some areas of challenge were indicated. These included knowledge of specific medications or medication categories and their dosages (Lewthwaite, et al., 2011). In results reported by Lewthwaite et al. (2009) there was a statistically significant correlation between university-prepared nurses and higher knowledge and attitudes scores. Canadian hospitals had recruited a substantial number of expatriate nurses during previous nurse shortages; Lewthwaite et al. (2009) found that nurses who had been educated in Canada, Britain and the US scored significantly higher on the KASRP than nurses educated in the Philippines.

2.4.4 Knowledge and Attitudes Regarding Pain: Europe

European studies (conducted in the United Kingdom, Ireland, Greece and Italy) show a range of low scores on knowledge and attitude about pain tests. Interestingly, Coulling (2005) found that British nurses fared better than doctors in knowledge test scores, specifically in assessment and analgesic delivery systems, (although doctors were more knowledgeable in pharmacology). Nurses' clinical skills confidence scores were also greater than those of doctors, and nurses felt more confident in pain assessment (Coulling, 2005). This result is in contrast to the findings of Stalnikowicz et al. (2005), who found physicians less likely than nurses to underestimate the patient's pain. Wilson (2007) found that specialist nurses in Britain, particularly those in oncology, demonstrated more comprehensive knowledge about pain than general nurses, but found no correlation between their knowledge scores and their years of nursing experience. This suggests that nurses are not acquiring accurate knowledge as a result of their experience in clinical practice. In Ireland, lack of knowledge was found to be positively associated with the undertreatment of pain: inadequate education, poor pain assessment, inaccurate knowledge of pharmacology of commonly used drugs and lack of knowledge of pain management were all cited as factors (Matthews & Malcolm, 2007). In Italy, Zanolin, et al. (2007) conducted a study amongst Italian healthcare professionals, showing an overall mean total correct score of 52.6% and a difference that was statistically significant between nurses' scores (51.3%) and those of physicians (56.5%). Another Italian study by Bernardi, et al. (2007) (n=287) reported mean total KASRP scores (with standard deviation in parentheses) at 21.4/39 correct (5.5) or 51.4% (14.1%) amongst oncology nurses.

These scores are similar to results found in the present research. Also similar was this Italian study's finding that the Italian participants underestimated their knowledge of pain management (Bernardi, et al., 2007). Italian nurses showed significant knowledge deficits in several domains, with up to 50% either undertreating pain or treating pain incorrectly; they also tended to incorrectly self-evaluate their own pain knowledge (Bernardi, et al., 2007; Zanolin, et al., 2007).

Greek registered nurses showed similarly low levels of knowledge as well as attitudinal barriers (Tafas, et al., 2002). In general, as is consistent with studies conducted in North America, deficiencies in knowledge and attitude are cited as contributing to the problem of adequate pain management in the United Kingdom and Europe (Berben, et al., 2012; Bible, 2006; Coulling, 2005; Erkes, et al., 2001; Matthews & Malcolm, 2007; Wells, Dryden, Guild, Levack, Farrer, & Mowat, 2001).

2.4.5 Knowledge and Attitudes Regarding Pain: Australia

An Australian study conducted in Tasmania (Van Niekerk & Martin, 2001) indicated that the mean number of correct responses on a modified KASRP was 20.61/29 (71%). In contrast, a study of knowledge and attitudes among final-year nursing students in Australia (n=81) and the Philippines (n=69) by Chiu, Trinca, Lim, and Tuazon (2003) reported mean total correct responses on the pain knowledge test questionnaire at 38.6%, with no significant difference between total scores for the two groups, although difference were noted among individual items. Australian results had shown pain knowledge deficits among nurses in surgical, neurological, medical and emergency wards (Heath, 1998) and had lacked up-to-date knowledge concerning the pharmacological management of pain (Van Niekerk & Martin, 2001). Nurses in Australia were also reported to demonstrate research-practice gaps, with nurses showing some theoretical knowledge that was not employed in their practice; they also showed knowledge deficits and a lack of understanding of the basic mechanisms of pain, treatment modalities and definitions of pain terms (Bird & Wallis, 2002; Chiu, et al., 2003; Van Niekerk & Martin, 2001). As well, Australian nurses reportedly tended not to believe the patient's self-report if they thought the patient's body language was inconsistent with the patient's report (Van Niekerk &

Martin, 2001). These results support other similar findings in the literature in which nurses' knowledge, acquired during their training, that the maxim "pain is what the patient says it is," was disregarded in practice (Van Niekerk & Martin, 2001).

2.4.6 Knowledge and Attitudes Regarding Pain: Asia

In Taiwan, knowledge deficits were identified through analysis of KASRP scores in several studies. Wang and Tsai (2010) reported an overall average correct response rate of 53.4% among the intensive care nurses surveyed (n=370). Similarly, Lui, et al. (2008) found deficits in nurses' knowledge in medical units in Hong Kong; while they did not report mean total scores, percentage of correct scores was noted to range from 47% to 72%. Tse and Chan (2004) developed a 25-item Chinese-language version of the KASRP, the KASRP-C, for use with hospital nurses in Hong Kong, and reported a mean score for participants of 11.7/25 (46.8%). Subsequently, Tse and Ho (2012) conducted an interventional study, again using the KASRP-C; they reported pre-intervention mean total scores (standard deviation in parentheses) of 7.9/25 (3.52) and 19.2/25 (4.4), post-intervention. Chinese nurses in Hong Kong showed substantial knowledge deficits in several domains, including inadequate knowledge of and misconceptions about pain relief interventions; lack of knowledge of pharmacological and non-pharmacological interventions for patients in pain; and failure to use appropriate pain assessment tools (Lui, et al., 2008; Tse & Chan, 2004; Tse & Ho, 2012).

Higher percentages of correct scores on the KASRP-C were correlated with longer clinical working experience, educational level, attendance at courses in pain management, years of caring for postoperative or cancer patients and frequency in managing postoperative or cancer patients; but no correlations were found with respect to age, rank and clinical practice settings (Lui, et al., 2008). Although nurses in Hong Kong showed positive attitudes towards pain management, there were discrepancies between practice and attitudes; for example most participants indicated that they believed the patient is the best judge of the amount of pain they have but also believed that most patients over-reported their pain (Lui, et al., 2008). Similar findings were noted by Lai, et al. (2003) in Taiwan using the Nurses Knowledge and Attitudes Survey – Taiwan (NKAS-T). In India, ICU nurses showed a lack of

knowledge about appropriate pharmacological pain treatment, often choosing non-pharmacological measures for managing significant pain in children (Subhashini, Vatsa, & Lodha, 2009).

2.4.7 Knowledge and Attitudes Regarding Pain: Middle East

In Eastern Mediterranean and Middle Eastern regions, quantitative studies have found knowledge deficits based on KASRP-based surveys of nurses. Yava, Çicek, Tosun, Özcan, Yildiz, and Dizer (2013) reported that among the Turkish nurses in their study (n=246), mean total KASRP scores (standard deviations in parentheses) were very low at 15.96 (7.33) (39.9%), with a range of 1 to 37 correct responses. Similar, but somewhat lower results for Turkish oncology nurses were reported by Yilidrim et al. (2008) at 13.81 (5.02) with a mean correct response rate of 35.41%. Results from a Jordanian study (Al Qadire & Al Khalaileh, 2012) recorded mean total KASRP scores, at 19.3 (4.7) (48.3%), with no statistically significant correlation between university education and higher KASRP scores with the exception of those participants who had previously had some exposure to pain education ($t=-3.64$; $df=195$; $p<.001$). A lack of pain knowledge was found in among Jordanian nurses (Abdalrahim, et al., 2011), in an intervention study using a questionnaire developed by Zanolin, et al. (2007). Pre-intervention, total mean score was 45.7% and post-intervention the total mean score rose to 75% (Abdalrahim, et al., 2011). These results suggests that Jordanian nurses may derive significant improvements in their knowledge and attitudes regarding pain from targeted pain education to a greater extent than from general nursing education or from clinical experience. Both Jordanian studies noted their results indicated an urgent need for pain education in that country. In an Iranian study of student nurses, mean total KASRP scores were reportedly very low, at 37% correct (Rahimi-Madiseh, Tavakol, & Dennick, 2010; 2007).

Saudi Arabian results in a study by Eid et al. (2014) found very low mean total KASRP scores of 16.9/40 (42.3%) among nurses including administrators, educators and those working in acute and intensive care wards. These authors found a statistically significant correlation between total scores on the knowledge test and clinical areas ($F_{3,588} = 4.4$; $p<.01$) as well as between total scores and nationality

($F_{5,566} = 5.3$; $p < .001$) with Nigerian nurses showing the highest mean scores. However, there was no statistically significant correlation between total mean scores and attendance at a pain management course within the preceding two years ($t(59) = 0.31$; $p = .7$) (2014). Analyses using Pearson correlation indicated no correlations between KASRP scores and age of the nurses who participated ($r(566) = 0.07$; $p = .10$) nor for years of nursing experience ($r(573) = 0.08$; $p = .06$) (Eid, et al., 2014).

One Saudi Arabian study has been conducted using the KASRP (Kaki, et al., 2009) to investigate nurses knowledge and attitudes regarding the administration of opioids for pain relief for patients recovering from surgery. Few nurses in this study accepted patient self-report of pain intensity and this adversely affected their clinical decision making (Kaki, et al., 2009). These nurses were shown to lack knowledge of patients' risk of addiction, tolerance and physical dependence. In general, their knowledge of acute pain, pain management and the use of opioid analgesia were all shown to be deficient in many aspects (Kaki, et al., 2009).

Nurses in the Middle East showed significant knowledge deficits, similar to nurses in North America, Europe and Asia. One result that stood out in the Middle Eastern studies was nurses' lack of knowledge regarding the addiction, dependence and tolerance and use of opioid analgesia.

2.4.8 Knowledge and Attitudes Regarding Pain: The Emergency Department

Studies investigating ED nurses' pain knowledge are few in number. Those found that had employed versions of the KASRP tool originated in the US (Moceri & Drevdahl, 2014; Tanabe & Buschmann, 2000), Taiwan (Tsai, et al., 2007) and Turkey (Ucuzal & Doğan, 2015). Both US Studies set in the ED reported considerably higher mean total scores than have been typically reported in the KASRP-based literature conducted in settings other than the ED, with the exception the Canadian study by Lewthwaite et al. (2011). In research conducted in five EDs in Northwestern US, Moceri and Drevdahl (2014) reported a mean total KASRP score of 76% among ED nurses. Although these US ED nurses had high overall mean total scores, there were some knowledge deficits related to understanding of addiction and dependence, as well as opioid pharmacology and dosage (Moceri & Drevdahl, 2014).

A study by Tanabe and Buschmann (2000) among emergency nurses in Midwestern US reported mean total scores (standard deviation in parentheses) of 29/40 (3.7) or 72.5% (9.3%) on a researcher-developed knowledge and attitudes survey somewhat similar to the KASRP and noted knowledge deficits for pharmacological interventions items (average score was 59%) and addiction items (average score 61% correct). Tsai, et al. (2007) reported mean total KASRP scores at 49.2% in a Taiwanese study in the ED using a Chinese version of the KASRP, the KASRP-C. Substantial knowledge deficits were noted in the domains of patient under-reporting of pain, side effects of opioids; as well, nurses in the study tended to undertreat or leave pain untreated based on interpretation of patient behaviour rather than patients's self-report (Tsai, et al., 2007). A Turkish study conducted in the ED did not report mean total KASRP scores, but noted that percentages of correct responses ranged from 7.0% to 74%, with 13 of the 15 items having a percentage of correct response at less than 50% (Ucuzal & Doğan, 2015).

In the US, knowledge deficits amongst ED nurses in non-KASRP-based studies found that participants failed to understand the difference between physical dependence, addiction and tolerance; and mispercieved the percentage of patients who were statistically likely to become physiologically addicted to opioids (Blank, Tobin, Jaouen, Smithline, Tierney, & Visintainer, 2014; Evans & Kohl, 2014; Glassberg, et al., 2013; Thomas, 2013). These knowledge deficits were similar to those found in non-emergency settings (Blank, et al., 2014; Brennan, Carr, & Cousins, 2007b; Chou, et al., 2009; Evans & Kohl, 2014; Glassberg, et al., 2013; Rose et al., 2011; Thomas, 2013) as well as in the present research project.

Also noted were lack of knowledge of analgesics and their side effects among ED nurses; as well as a lack of awareness of the toxic central nervous system effects associated with repeated doses of meperidine, lack of awareness that non-steroidal anti-inflammatory drugs (NSAIDs) have a ceiling effect and that ibuprofen, 200 mg, is superior to Aspirin, 650 mg, for analgesic effects (Tanabe & Buschmann, 2000). ED nurses in Taiwan showed a low knowledge level, consistent with findings in North American and Europe (Tsai, et al., 2007).

Finally, even with the little that is currently know about pain management in the ED in Saudi Arabia, it is apparent that despite the abundant health care resources

available, pain management in Saudi Arabia is known not to be optimal (Rehmani, 2010; Taha & Rehmani, 2011). Pain experts in Saudi Arabia have acknowledged this and have pledged resources and professional commitment to addressing sub-optimal pain management (Saudi Society for Pain Medicine, 2009).

2.4.9 Summary

There is evidence from KASRP-based studies of deficits in nurses' knowledge and attitudes regarding pain. Some nurses are inadequately prepared for their role in pain management. A lack of sufficient pain management education and a need to undertake improvements in pain management in nursing education have been identified (Ferrell, Grant, Ritchey, Ropchan, & Rivera, 1993; Ferrell, et al., 2000; Institute of Medicine, 2011; Steglitz, Buscemi, & Ferguson, 2012; Voshall, Dunn, & Shelestak, 2013). In addition, the implementation of pain management guidelines has been recommended as a way to ensure that nurses are appropriately prepared for and capable of fulfilling their role in pain management practice (Institute of Medicine, 2011; Steglitz, et al., 2012; Voshall, et al., 2013).

The knowledge and attitudes research within pain management reveals paradoxes that are an ongoing challenge for researchers as well as for clinicians (Dawson, Spross, Jablonski, Hoyer, Sellers, & Solomon, 2002; Dihle, et al., 2006; International Association for the Study of Pain, 2011b). In the ED in particular, knowledge and attitudes are critical. The RN caring for patients in pain is expected to think critically, to use evidence-based judgment and to deliver care based on the knowledge and experience they have gained in their education and clinical practice (International Council of Nurses, 2006). Knowledge that is not evidence-based and the attitudes and beliefs that nurses bring to their practice in the ED therefore contribute to the complexity of pain management in this already challenging clinical setting. As has been noted throughout the foregoing sections of this chapter, optimal pain management is a significant issue for nurses, whose mandate it is to provide a timely response to patients' pain and to manage it effectively. Optimal (quality) pain management is sometimes to be found in the ED, but untreated pain is known to exist as well (Albrecht, Taffe, Yersin, Schoettker, Decosterd, & Hugli, 2013; Greco, et al., 2014; Stalnikowicz, et al., 2005). Recognition of this paradox – the desire to provide

optimal pain management combined with the difficulty of doing so in the ED – has motivated research that seeks to identify barriers in nursing practice that stand in the way of optimal pain management. The following section presents a discussion of barriers that have been noted to exist in the ED.

2.5 Barriers to Optimal Pain Management

Knowledge that is not based on best practice is known to intersect with negative attitude formation which create barriers to optimal pain management (McNamara, Harmon, & Saunders, 2012). When nurses cling to myths about pain, despite the abundance of solid scientifically-based knowledge available to them, their patients suffer the consequences (Cowan, 2006; Patterson, 2009).

2.5.1 Myths and Misconceptions about Pain

The Latin root of the word “patient” is *patiens*, which means “one who suffers” With (Brennan, et al., 2007a, p. 208). With all that is known to science about pain, the association of the patient with necessary suffering persists. These types of myths include the idea that pain is part of being human and cannot be avoided; the belief that pain is not only natural and beneficial but also necessary for diagnosis; and that there are essentially no negative consequences that occur because of untreated pain (Brennan, et al., 2007a).

The Macquarie Dictionary (2014) defines myth as “a collective belief that is built up in response to the wishes of the group rather than an analysis of the basis of the wishes”. A myth is thus a widely held belief or idea that is, nevertheless, false. A misconception, similarly, is an “erroneous conception or mistaken notion” (Macquarie Dictionary, 2014): that is, an idea, belief, view or opinion that is erroneous because it is based on faulty understanding or incorrect thinking. Thus, myths and misconceptions about pain constitute barriers to optimal pain management not because those who hold such beliefs simply lack knowledge, but because they are mistaken in the belief they already possess the necessary nursing knowledge about a particular aspect of practice. Research implicates the role of numerous deeply-rooted myths and misconceptions that constitute barriers to optimal pain management

(Bible, 2006; Broekmans, et al., 2004; Brown, et al., 1999; Duke, et al., 2013; Erkes, et al., 2001; Lovering, 2006; Tse & Chan, 2004; Tse & Ho, 2012; Young & Davidhizar, 2008; Young, et al., 2006).

Despite the nursing's profession's strong commitment to optimal pain management, research has found that some nurses in acute care, critical care and emergency settings are strongly invested in myths about pain that lead them to underestimate and undertreat pain (Cowan, 2006; Muntlin, et al., 2011; Patterson, 2009). Common myths include such notions as: patients with severe pain cannot sleep, will have abnormal vital signs, will have abnormal clinical signs, will 'appear' to be in pain, will be unable to laugh or smile, cannot watch television, or can be tested for 'real' pain with placebo (D'Arcy, 2008; Patterson, 2009). Misconceptions include mistaken views about patients and their pain, such as those who complain loudly or aggressively, who have knowledge of their condition and analgesia, and who are perceived to be 'clock-watchers' or 'drug-seekers' are often considered to be addicts or malingerers (D'Arcy, 2008). Analgesia, particularly narcotic medication, is frequently withheld in such cases (Brennan, et al., 2007a, 2007b; D'Arcy, 2008).

It is also commonly reported that nurses judge those who complain of chronic, non-cancer pain, or of acute pain episodes with chronic conditions and to assume that they are malingering or have a psychological problem (Bates & Rankin-Hill, 1994; Brennan, et al., 2007a; Chow & Chan, 2015; Freiermuth, et al., 2014; Glassberg, et al., 2013; Hahn & Gawronski, 2014; McCaffery, et al., 2000; Morgan, 2012). Other judgements about patients based on myths include the notion that there are 'bad patients' and 'good patients' and that those who are 'good' do not complain and never challenge their physicians or nurses (Brennan, et al., 2007a).

Additionally, myths and misconceptions include several incorrect notions about the inevitability of some types of pain, including the idea that severe pain following surgery is inevitable, the idea that some pain cannot be treated and that cancer pain cannot be avoided (Brennan, et al., 2007a; Patterson, 2009). It is a common misconception that analgesia at triage or initial assessment interferes with diagnosis, for example of an acute abdomen, yet evidence has shown this not to be the case in either children (Green, Bulloch, Kabani, Hancock, & Tenenbein, 2005; Kim, Strait,

Sato, & Hennes, 2002) or adults (Manterola, Astudillo, Losada, Pineda, Sanhueza, & Vial, 2007; Ranji, Goldman, Simel, & Shojania, 2006).

Patterson (2009) notes the myth that “nurses usually provide adequate medication for pain control” (p. 60), whereas in fact, research indicates that nurses generally provide analgesic doses in the lower part of the range when physicians prescribe a dose range (Brennan, et al., 2007a). It has been suggested that this may be related to the fact that nurses frequently have difficulty believing that their patients are in pain (McNamara, et al., 2012).

Finally, among the most pervasive and harmful myths and misconceptions about pain are those involving erroneous ideas about opioids. It has been conclusively demonstrated that opioids are not addictive when used for pain relief (Cowan, 2006; Ead, 2005; McNamara, et al., 2012; Patterson, 2009), yet the myth persists that patients in pain, especially those with chronic pain conditions, are at substantial risk for addiction.

2.5.2 The Use of Opioids and ‘Opiophobia’

It is a commonly-held myth among clinicians that pharmacologic interventions with opioids tend to lead to addiction and hence they are reluctant to prescribe them in the misapprehension that they will be enabling their patients in substance abuse (Glynn & Ahern, 2000; Lovering, 2006; Narayan, 2010; Rupp & Delaney, 2004; Weissman, Gordon, & Bidar-Sielaff, 2004). So pervasive is this fear of opioid addiction that it has acquired a distinct name: ‘opiophobia’ (fear of opioids) and a large body of literature has been devoted, without success, to replacing myths and misconceptions about opioids with facts, and the undertreatment of pain (that could be optimally managed with opioids) with evidence-based protocols for opioid use (Anderson et al., 2002; Bennett & Carr, 2002; Blengini, Joranson, & Ryan, 2003; Brennan, et al., 2007b; Broekmans, et al., 2004; Covington, 2000; Ferrell, McCaffery, & Rhiner, 1992; Heins, Heins, Grammas, Costello, Huang, & Mishra, 2006; Jacob, 2001; Kemp, Ersek, & Turner, 2005; Lipman, 2004; McCaffery & Ferrell, 1992, 1997, 1999; Merrill, Dale, & Thornby, 2000; Michna et al., 2014; Pack-Mabien, et al., 2001; Pud, 2004; Rhodin, 2006; Smith & Colvin, 2005; Telfer, Bahal, Lo, & Challands, 2014; Wells, et al., 2001; Wild, 1990).

A related misconception is that addiction, tolerance and dependence are the same phenomena whereas in fact, patients showing symptoms of dependence and tolerance of opioids as the result of long-term opioid therapy are not addicts and should not be treated as such (Anderson, et al., 2002; Ballantyne & LaForge, 2007; Bounes, et al., 2014; Brennan, et al., 2007b; Cowan, 2006; Ead, 2005; Elander, Lusher, Bevan, & Telfer, 2003; Elander, Lusher, Bevan, Telfer, & Burton, 2004; McCaffery, 1999; McCaffery & Ferrell, 1992; Patterson, 2009; Smith & Colvin, 2005; Waldrop & Mandry, 1995). So widespread is opiophobia that many healthcare professionals consider a range of misapprehension about opioid addiction and harmful side effects to be factual knowledge; what is more, they therefore perceive the resultant undertreatment of pain as a necessary step in safeguarding the client (Allen, Jewers, & McDonald, 2014; Ballantyne & LaForge, 2007; Bell, 2002; Lusher, Elander, Bevan, Telfer, & Burton, 2006). Myths and misconceptions about the harmfulness or side effects of drugs, including fears of addiction, have been related both to myths about narcotic dependence and exaggerations of the adverse effect that opioids analgesic use could have on clients (Allen, et al., 2014; Ferrell, et al., 1992; Lebovits, Florence, Bathina, Hunko, Fox, & Bramble, 1997; McCaffery & Ferrell, 1997; Moceris & Drevdahl, 2014; Pack-Mabien, et al., 2001; Pasero, et al., 2009; Patterson, 2009).

There are many studies examining the role of 'opiophobia' (Bennett & Carr 2001; Davidson 1997; Rhodin 2006) in inadequate pain management. Opiophobia is well-documented in the literature as a substantial attitudinal barrier that is widely implicated in inadequate pain relief (Harrison, 1993; Helms & Barone, 2008; Merrill, et al., 2000). Widely-held beliefs (myths) among nurses that analgesics, particularly opioids, are harmful and addictive are problematic; among other issues, this leads to the attitude among nurses that many patients are malingering (Duignan & Dunn, 2008a, 2009; McCaffery & Ferrell, 1999). Nurses may consider prescriptions for strong analgesics, particularly opioids puts patients at risk for addiction and therefore interpret requests for pain relief as drug-seeking (Duignan & Dunn, 2008a, 2009). Research indicates that patients frequently receive inadequate dosages of opioid medication for pain relief, when nurses titrate an inadequate dosage even when the physician has prescribed a fully adequate amount (Broekmans et al. 2004; Celia 1997; Lipely 2002).

2.5.3 Pseudoaddiction

Current research notes a phenomenon known as pseudoaddiction, in particular with respect to pain management in patients suffering from diseases that are associated with chronic pain such as SCD, which is a frequent presentation in the ED in KSA (Bergman & Diamond, 2013; El-Hazmi, Al-Hazmi, & Warsy, 2011; Elander, et al., 2004; Glassberg, et al., 2013; Jastaniah, 2011; Taha & Rehmani, 2011; Tanabe et al., 2007; Udezue & Girshab, 2005). Negative attitudes toward patients presenting to the ED with SCD-related pain have been reported in regions with a significant prevalence of SCD in the population, as is the case in Saudi Arabia, where the overall prevalence of SCD is estimated at 2.6%, although rates vary greatly from province to province (El-Hazmi, et al., 2011; Jastaniah, 2011). This has been specifically identified in Saudi Arabia in two ED studies (Taha & Rehmani, 2011; Udezue & Girshab, 2005) although without specific references to pseudoaddiction. The undertreatment of SCD-related pain has been documented in number of studies that associate sub-optimal pain management with undetected or misinterpreted pseudoaddiction (Aisiku et al., 2009; Elander, et al., 2004; Freiermuth, et al., 2014; Glassberg, et al., 2013; Haywood et al., 2014; Ratanawongsa et al., 2009; Wright & Adeosum, 2009; Zempsky, 2010). The barrier of pseudoaddiction to optimal pain management arises from the misconception among clinicians that certain patient behaviours indicate addiction, whereas in fact the patients frequently are displaying pseudoaddictive behaviour, as an iatrogenic response to the chronic undertreatment of their pain (Elander, et al., 2004; Lusher, et al., 2006; Todd, Green, Bonham Jr, Haywood Jr, & Ivy, 2006; Wright & Adeosum, 2009).

Pseudoaddictive behaviours identified in the literature include: frequent presentation at ED, being knowledgeable about pain and analgesia, groaning, grimacing, crying and loud, aggressive demands for attention (Bergman & Diamond, 2013; Elander, et al., 2004; Lusher, et al., 2006). These behaviours are interpreted to indicate malingering, drug-seeking due to addiction or substance abuse, or both (Elander, et al., 2004; Lusher, et al., 2006; Udezue & Girshab, 2005; Wright & Adeosum, 2009). Studies have established that patients' pain reports are misinterpreted as addictive behaviour due to widespread concerns about substance abuse in SCD, despite overwhelming evidence of the devastating and life-altering pain that characterises

SCD and the presentation at ED with SCD is predominantly due to pain rather than addiction (Adam, Telen, Jonassaint, De Castro, & Jonassaint, 2010; Aisiku, et al., 2009; Darbari, Neely, van den Anker, & Rana, 2011; Taylor, Stotts, Humphreys, Treadwell, & Miaskowski, 2010; Todd, et al., 2006; Wang, Wilkie, & Molokie, 2010; Wright & Adeosum, 2009).

Patients suffering from SCD, similar to many patients with chronic disease in which pain is a significant feature, demonstrate considerable knowledge about analgesia and many clinicians interpret this as drug-seeking behaviour, particularly when a patient asks for a specific analgesic or suggests a specific dose of an opioid (Todd, et al., 2006). It is a recognised feature of SCD that chronic undertreatment of pain and the nature of the disease, in which painful crises can occur frequently and without warning, contribute to frequent visits to the ED with a presentation of severe pain. This frequency is known to contribute to an impression among health care professionals who are inadequately informed or who erroneously believe there is widespread substance abuse among patients with significant pain (Aisiku, et al., 2009).

Thus, a lack of knowledge about the phenomenon of pseudoaddiction can contribute to a cycle of distrust about patient pain reports and non-treatment or undertreatment of patients' pain (Aisiku, et al., 2009; Elander, et al., 2004; Ezenwa, Molokie, Wang, Yao, Suarez, Angulo, & Wilkie, 2014; Lusher, et al., 2006). This in turn leads to more pseudoaddictive patient behaviours – that is, the patient in pain who is not believed about the pain severity may escalate the acting out of pain behaviours in an effort to convince physicians and nurses that their pain is real and severe. Such behaviour, although it resembles behaviour seen in substance dependence, actually is the result of inadequate management of the pain and it should not be taken as evidence of malingering, but must be recognised as an indication that the pain assessment and management strategy must be reviewed on an urgent basis (Wright & Adeosum, 2009).

2.5.4 Socio-cultural Barriers

Health care professionals are affected by social, cultural and psychological factors that influence the way they assess pain (Pasero & McCaffery, 2011; Rose et al.,

2012; Schreiber et al., 2013; Ware, Epps, Clark, & Chatterjee, 2012; Wilsey, et al., 2008b; Young & Davidhizar, 2008; Zeitoun, et al., 2013). How nurses interpret their patients' expression of pain and how they act upon the information can have a substantial impact on the adequacy of the subsequent pain management (American Medical Association, 2013; Haywood, et al., 2014; Howard, Allison, Proud, & Forman, 2014; Uri, Elias, Behrbalk, & Halpern, 2013; Wilsey, et al., 2008b; Young & Davidhizar, 2008). These subjective responses may be related to attitudes about patient attributes including their gender, race, age, ethnicity, religion, personality, attractiveness, or personal hygiene (Duignan & Dunn, 2008a). Health care providers may not recognise or appreciate individual, cultural and gender differences in pain reporting and may be biased about – and therefore disbelieving of – the accuracy with which patients report pain. This may be based on personal judgement about social, cultural, ethnic or sexual stereotyping of those patients or the belief that some patients are stoic and under-report their pain, while others over-report their pain because they are drug-seeking or intolerant of any discomfort (Bennett & Carr, 2002; Covington, 2000; Hsieh, Lai, Shih, Hwang, Cheng, & Fang, 2013; Rhodin, 2006). They thus interpret patients' need for analgesia based on conscious or unconscious biases based on age, ethnicity, gender or even affability (Broekmans, et al., 2004; Celia, 2000; McCaffery & Ferrell, 1996).

2.5.5 Subjectivity

Although it may be possible to ameliorate cultural, gender, or ethnic biases, subjectivity in general is difficult to eliminate entirely. Several researchers have designed studies to examine subjectivity specifically, by investigating the influence of personal history or experience on health care workers' attitudes to pain control (Hirsh, Callander, & Robinson, 2011; Hirsh, Jensen, & Robinson, 2010; Pud, 2004; Robins, 2007; Young & Davidhizar, 2008). A study by Arber (2004) noted that the personal history of healthcare providers' pain experience, described as the person's 'pain autobiography', underpins their subjectivity when they assess pain. This can include having experienced pain themselves or beliefs developed during their "professional socialization, such as in nursing or medical school" (p. 492). Pud (2004) surveyed 163 hospital health care providers to determine their experience with the personal use of opioids for pain relief and the influence of this personal

experience on participants' attitudes to and knowledge of pain management. Findings indicated that, compared with those who had never used opioids, health care workers' personal past experience with opioid analgesic use was an important factor in formulating their attitudes toward pain and achieving good pain control outcomes. Those who had had previous experience with opioids to control their own pain were found more likely to perceive that patients' pain management might not be adequate for satisfactory pain relief (Arber, 2004, p. 492). As Pud (2004) notes, clinicians might have personally experienced unsatisfactory pain management with the use of opioids for pain relief and developed negative attitudes toward their use for patients; or on the contrary, might have had a very satisfactory experience with opioids and thus could be empathetic toward those patients who did not receive opioids and did not have satisfactory pain relief. Either one of these possible explanations support the suggestion made by Ryan, Vortherms and Ward (Pud, 2004) that healthcare providers must have good understanding of and insight into their own attitudes regarding pain in order to be able to provide optimal pain assessment and management. Additional research still remains to be conducted to determine which factors might lead to this.

A study of the role of contextual variables on Australian medical and nursing students' judgements regarding patients' pain (Twigg & Byrne, 2015) found that when there was an identified pain pathology the result was increased ratings of patients' pain intensity and emotional distress together with a lower perception that the patient might be malingering. Findings of this study suggest there is a significant role played by contextual variables and that this role is already a significant one during professional training. A study by Robins (2007) found that nurses, due to their prior experiences or personal history, sometimes withheld some prescribed analgesics. Robins (2007) notes, "as several early nursing research studies have identified, the subjectivity of practitioners' opinion, possibly based on their association of specific pain levels with conditions they have experienced themselves, can impair the pain relief of patients" (p. 28). Research results suggests that the issue of administering analgesia and managing pain can sometime fall into the hands and mind of a person who will allow personal experience to affect their judgment in pain assessment and perhaps therefore not consider pain control as a first priority, either for the patient, or to the provider of health care (Hirsh, et al., 2011; Hirsh, et al.,

2010; Twigg & Byrne, 2015). Worldwide, it has been found that patients who are members of racial/ethnic minorities tend to have poorer mental and physical health compared with racial/ethnic majorities, and moreover that racial/ ethnic healthcare disparities are implicated in this issue (Penner, Hagiwara, Eggly, Gaertner, Albrecht, & Dovidio, 2013; Streltzer & Wade, 1981; Tait & Chibnall, 2014).

A vignette-based US study (Haider et al., 2015) examined implicit racial bias among RNs (n= 245) with results indicating implicit racial and social class biases to be present among the predominantly white (n=203) and female (n=217) RNs who participated in the study. However, a majority of RNs in the study (n=174; 71%) reported that they had no explicit race biases and nearly half (n=108; 44%) reported not having any explicit social class bias. There were found to be no significant differences in overall decision making about patient treatment choices based on such implicit biases. Responses for two clinical vignettes were found have statistically significant correlations with differential patient treatment decisions based on race in one case and on socio-economic status in another (Haider, et al., 2015).

2.5.6 Culture and Communication

Poor communication among doctors, nurses and patients can present a substantial barrier to pain management (Bible, 2006; Broekmans, et al., 2004; Burns & Grove, 2005; Delattre, Ocler, Moulette, & Rymeyko, 2009; Duignan & Dunn, 2008a; Glynn & Ahern, 2000; Puntillo, et al., 2003; Stalnikowicz, et al., 2005). The concept of culture as it affects communication between health care providers and patients has been informed by ethnography, which has been criticized for essentializing culture, i.e., defining it reductively (Bhabha, 1994; Clifford & Marcus, 1986; Said, 1978). Moreover, many scholars have suggested that the concepts of cultural awareness, cultural sensitivity, cultural competence, and cultural congruence – all of which are topics typically considered when investigating the role of culture in communication – are problematic (Habayeb, 1995; Mulholland, 1995; Talabere, 1996). One of the main theories that have been employed by nursing researchers who focus on cross-cultural communication is transcultural nursing theory (Giger, 2013; Miller, Leininger, Leuning, Pacquiao, Andrews, Ludwid-Beymer, & Papadopoulos, 2008; Ray, 2010). However, transcultural nursing's approach to cross-cultural

communication has also been criticized for: not addressing important epistemological issues (Andrews & Boyle, 2003); not recognizing the power relations between nurses and patients (Culley, 1996); and reducing complex socio-cultural issues to stereotypes (Gustafson, 2005; Price & Cortis, 2000).

Communications issues noted in the literature that have not taken the transcultural nursing approach include explorations of the way cultural perceptions, such as nurses failing to accurately perceive how individual differences such as culture and gender, may affect the way patients report pain reporting. For example, Harrison (1993) noted that Kuwait is a multi-ethnic community and language may be a barrier, in that nurses and patients may not have a common language that is adequate for detailed communication about pain. Such results suggest that an important aspect of communication is sharing a common language. Rupp and Delaney (2004) found that because of personal biases related to culture and ethnic differences, the nurses they studied tended to disbelieve some patients who reported pain, based on those biases. In a general sense, Davidhizar has suggested that culture affects nurse-patient communication in that it “shapes the values, beliefs, norms, and practices of individuals, including the ways persons react to pain. Culture affects the assessment and management of pain” (2004, p. 47). A qualitative study of Iranian surgical nurses supports this suggestion, concluding that among the barriers to effective pain management were cultural attitudes and differences, some of which were associated with nurses’ disbelief of patients’ complaints of pain (Rejeh, Ahmadi, Mohammadi, Anoosheh, & Kazemnejad, 2009a).

Froholdt (2010) has argued against making culture accountable “for everything that goes on and goes wrong in cross-cultural interaction” (p. 398); a number of researchers investigating communication as a barrier to optimal pain management have implicated a number of attitudes about patient attributes, including not only their culture or ethnicity, but also their gender, race, age, religion, personality, attractiveness, or personal hygiene (Broekmans, et al., 2004; Celia, 2000; McCaffery & Ferrell, 1996).

Whether or not the causes of communication as a barrier in pain management are directly related to culture, a number of studies have conducted intervention studies to determine ways such barriers might be ameliorated. For example, a randomized

controlled trial (n=89) conducted in the US with cancer patients investigated the effect of a patient communication intervention on barriers to pain management, using the Barriers Questionnaire (BQ) that measures degree of patients' misconception about cancer pain and treatment (Smith, DuHamel, Egert, & Winkel, 2010). Patients in the intervention group reported that pain barriers were significantly decreased, but there was no significant impact on other outcomes such as pain relief (measured using the Brief Pain Inventory (BPI), quality of life (measured using the Medical Outcomes Study Short-Form 12 item (MOS SF-12)), distress (measured using the Mental Health Inventory (MHI)), or satisfaction with care (measured using the Patient Satisfaction Questionnaire (PSQ)). Another US-based randomized controlled trial (n=447) in the ED investigated whether having in-person professional interpreter services in the ED affected satisfaction of both patients with limited proficiency in English and their health providers (Bagchi, Dale, Verbitsky-Savitz, Andrecheck, Zavotsky, & Eisenstein, 2011). Findings indicated that 96% of patients in the treatment group responded that they were 'very satisfied' whereas 24% of patients in the control groups were 'very satisfied' (Bagchi, et al., 2011). In addition, triage and discharge nurses and physicians were more likely to be very satisfied with care provider-patient communication (Bagchi, et al., 2011). , among patients in the treatment group than the control group Following a study conducted at five hospitals in Italy (Prandi, Garrino, Mastromarino, Torino, Vellone, Peruselli, & Alvaro, 2015), European researchers noted the importance of communication in providing optimal pain management for cancer patients and concluded that education is needed to address communication barriers. Finally, a recent US study (Wittenberg, Goldsmith, Ferrell, & Platt, in press) noted that the use of plain language can enhance communication between patients and health care providers and lead to improvements in pain management.

2.5.7 Other Barriers

Patients and family members who are reluctant to comply with pain management need to work with health care providers, McCaffery (2001) suggests, to help the patients and their relatives overcome their fears of harm and stigma and agree to receive sufficient pain management. Mann & Redwood (2000) have identified barriers they term "invisible": these are barriers created by institutional policies,

nursing rituals and nursing unit cultures. Several studies have reported as a barrier the responsibility of caring for patients with pain along with other acutely ill patients (Lai, et al., 2003; Tanabe & Buschmann, 2000). Barriers to pain management in the ED that Tanabe and Buschmann (2000) identified in their study were: nurses having to wait to medicate until a physician had diagnosed the patient; inadequate pain assessment; and inadequate pain relief.

In several Iranian studies (Rejeh, Ahmadi, Mohammadi, Anoosheh, & Kazemnejad, 2008; Rejeh, et al., 2009a; Rejeh, Ahmadi, Mohammadi, Kazemnejad, & Anoosheh, 2009b), a substantial number of barriers were identified by participants. These were: powerlessness, policies and rules of organisation and physicians who were leading practice despite a lack of educational preparation; nurses' limited authority; limited nurse-patient relationship; disturbances in pain management interventions; insufficient resources (including heavy workload, time constraints, poor staffing levels and defective equipment); medical hierarchy; difficulties with believing patients' complained of pain; and the negative effect on patients of nurses' poor judgments about the amount of pain patients were suffering. Harrison (1993) noted that nurses in Kuwait had issues of status in relation to physicians. The physician-nurse hierarchy meant that nurses had a lesser degree of independent control such as limited PRN prescribing, with nurses therefore less able exercise their own initiative (Harrison, 1993). Studies from the Middle Eastern countries of Kuwait and Iran thus have in common that a sense of powerlessness among nurses has been cited as a barrier within pain management nursing practice in those countries.

2.5.8 Summary

From the foregoing descriptions it is clear that research has identified a substantial range of barriers to optimal pain management, and that these have been found to be related to both knowledge and attitude deficits. The fact that researchers have been noting these barriers for decades suggests that the difficulties in fully understanding the situation are also substantial. No matter what the reasons for the ongoing presence of these barriers, it is widely recognised that they have significant consequences for pain: throughout the world, policy makers along with health care researchers continue to struggle to find solutions.

2.6 Global Perspectives on Pain Management

This section outlines the global perspective on pain, the burden of unrelieved pain, the results of efforts to improve pain management and recommendations for how ongoing improvements may be achieved. The literature is discussed from the global perspective as well as several regional and national perspectives. Finally, the literature on pain management in the ED setting is addressed from various national perspectives including what is currently known about pain management and unrelieved pain in the ED in Saudi Arabia.

In 2010, the International Association for the Study of Pain achieved two significant milestones in pain management policy: one was the Declaration of Montréal (Harrison, 1993; International Association for the Study of Pain, 2010a; Rejeh, et al., 2008, 2009a; Rejeh, et al., 2009b); and the other was the Desirable Characteristics of National Pain Strategies (International Association for the Study of Pain, 2010b). These two declarations established pain management as a fundamental human right and one of the first principles of good healthcare (Cousins & Lynch, 2011; International Association for the Study of Pain, 2010a, 2010b). In addition, pain experts from many countries worldwide who were delegates to the International Association for the Study of Pain's Global Pain Summit in 2010, concluded that: (1) pain is not adequately addressed for reasons related to culture, attitude, education, politics, religion and logistics; (2) when pain is not adequately treated, there are substantial physiological, psychological, economic and social consequences for patients, for their family members and for society as well; and (3) all developed countries and many developing countries possess the capacity to substantially improve the way pain is treated (International Association for the Study of Pain, 2010a, 2010b, 2011, 2015). The World Health Organization and the International Association for the Study of Pain joined forces a decade ago to sponsor ongoing, internationally-based initiatives to improve pain management, under the heading *Global Year Against Pain*: these annual initiatives address different categories and aspects of pain, such as the right to pain relief (International Association for the Study of Pain, 2004), acute pain (International Association for the Study of Pain, 2011) and neuropathic pain (International Association for the Study of Pain, 2015).

International organisations have made numerous recommendations for the improvement of pain management (Cousins, 2012; Cousins & Lynch, 2011; Henschke, et al., 2015; International Association for the Study of Pain, 2010a, 2010b, 2011, 2015). The World Health Organization urges that pain should not continue to be treated as an ‘undertreated symptom’ but must itself be considered a disease requiring treatment (World Health Organization, 2008). Numerous scholars have stated – for more than a decade – that persistent and chronic pain are disease entities although they are generally not considered to be such (Cousins, 2007; Greco, et al., 2011; Siddall & Cousins, 2004; Wilson, 2014). In a recent epidemiological study of global public health as impacted by pain, authors of the study stated:

...the paradigmatic view of pain as a symptom of disease, rather than as a disease state itself, has contributed to the neglect of this condition in the world of public health. Raising awareness about pain for the public health community requires clearly defining pain as a disease state and demonstrating why it must be a public health priority. (Cousins, 2007; Goldberg & McGee, 2011, p. 770; Greco, et al., 2011; Siddall & Cousins, 2004; Wilson, 2014)

2.6.1 The Global Burden of Unrelieved Pain

The burden of unrelieved pain throughout the world is enormous (Goebel, et al., 2009; Green, 2011; Neogi, 2013; Riva, et al., 2011; Schwaller & Fitzgerald, 2014; Steglitz, et al., 2012). The worldwide prevalence and incidence of pain are both significant (Fitzpatrick, 1998; Goren, Mould-Quevedo, & daCosta Dibonaventura, 2014; Haywood, et al., 2014; Henschke, et al., 2015; Langley, et al., 2010; Langley, 2011, 2012; Mick, et al., 2013; Patrick, et al., 2014; Swain, Henschke, Kamper, Gobina, Ottová-Jordan, & Maher, 2014). Much of this pain is undertreated, which has a substantial effect on populations and economies (Collett & Berkley, 2007; Gibson, 2007; Henschke, et al., 2015; International Association for the Study of Pain, 2011, 2015; LeResche, 2008; Swain, et al., 2014; World Health Organization, 2004)..

Epidemiological studies on aspects of pain such as the prevalence of pain (the proportion of those in the population who have pain) and incidence of pain (the number of new pain cases in a fixed time period) and the impact of pain management

practices and unrelieved pain have been conducted to assess the global consequences of pain and several have been conducted in particular countries and regions, including Europe, the US and India. In a recent review, the Mayo Foundation for Medical Education and Research concluded:

Pain is considered a major clinical, social, and economic problem in communities around the world [...] with estimates of the monthly prevalence ranging from 1.0% to over 60.0%. In addition, pain conditions appear to have the greatest negative impact on quality of life compared with other health problems, and they contribute the most to disability around the world. (Henschke, et al., 2015, p. 139)

Worldwide, the economic impact of pain is also very large; estimates of the total cost of pain is as high as 3.0% of gross domestic product, with the annual cost of pain exceeding the cost of both cancer and heart disease (Henschke, et al., 2015).

2.6.1.1 The Burden of Unrelieved Pain in the United States

The US Institute of Medicine recently estimated the costs of attempting to manage Americans' pain at more than US\$600 billion per year (American Academy of Pain Medicine, 2014; Pizzo & Clark, 2012). Furthermore, at least 100 million Americans suffer from chronic pain – a prevalence of over 30% (American Academy of Pain Medicine, 2014; Pizzo & Clark, 2012). Pain management in the US was reported to be inadequate and specified that individual clinicians lacked knowledge and their attitudes often included denial and avoidance (Pizzo & Clark, 2012). Recommendations included the following:

...to remediate the mismatch between knowledge of pain care and its application will require a cultural transformation in the way clinicians and the public view pain and its treatment. Currently the attitude is often denial and avoidance. Instead, clinicians, family members, employers, and friends inevitably must rely on a person's ability to express his or her subjective experience of pain and learn to trust that expression, and the medical system must give these expressions credence and endeavor to respond to them honestly and effectively. (Pizzo & Clark, 2012, p. 198)

Thus, it has been indicated that in the US, both institutional culture and public perception need to change (Pizzo & Clark, 2012).

Another review article examined the extent to which in the US “racial/ethnic minorities suffer disproportionately from unrelieved pain compared with Whites” (Shavers, Bakos, & Sheppard, 2010, p. 177). The reviewed articles, published from 1990-2008, investigated relationships among race/ethnicity and various social, cultural, healthcare system factors, as well as individual characteristics of providers and patients, to determine how these might contribute to differences in the way pain is managed (Shavers, et al., 2010). The conclusions were that racial and ethnic difference in pain management in the US were related to limits for some racial and ethnic minority patients in their access to healthcare in general and to pain specialists and analgesics specifically (Shavers, et al., 2010). In addition, the review noted misperceptions and miscommunications about pain severity, patient attitudes and beliefs that affected their willingness to accept analgesia; and provider, knowledge, attitudes and beliefs about patient pain that resulted in pain undertreatment (Shavers, et al., 2010).

Polomano (2008) noted that many health care professionals in the US do not receive formal training in acute pain management and therefore lack the necessary knowledge, resulting in pain that is inadequately controlled and adverse effects that are poorly managed, with serious consequences for patient outcomes.

Overall, inadequate pain management in the ED in the US has been attributed to a number of factors, including failing to recognise the role of differences in pain reporting by patients, disbelieving the patient’s pain report due to bias based in culture, gender, age, racial or ethnic stereotyping, myths and misconceptions about pain and about analgesics (particularly opioids) and inadequate knowledge about pain and its management (Albrecht, et al., 2013; Bennett & Carr, 2002; Dunwoody, et al., 2008; Greco, et al., 2011; Greco, et al., 2014; Krenzischek, Dunwoody, Polomano, & Rathmell, 2008; Lipman, 2004; Molton & Terrill, 2014; Pizzo & Clark, 2012; Polomano, et al., 2008; Rupp & Delaney, 2004; Shavers, et al., 2010).

2.6.1.2 The Burden of Unrelieved Pain in Europe

A survey of chronic pain in 15 European countries, along with Israel (n=4839, approximately 300 per country studied), investigated the severity of pain, how it was treated and the pain's impact on the individual as well as the pain prevalence (Breivik, Collett, Ventafridda, Cohen, & Gallacher, 2006). Pain levels were high: 66% reported moderate pain of 5-7 on the numeric rating scale of 1-10 and 34% had severe pain of 8-10 on the scale (Breivik, et al., 2006). The impact of the pain was substantial, with depression due to pain diagnosed in 21%, work-related disability in 61%, 19% unemployed because of pain and 13% had changed jobs because of their pain (Breivik, et al., 2006). Only 2% were having their pain treated by a pain specialist and 40% described their pain as inadequately managed (Breivik, et al., 2006). The prevalence of moderate to severe, chronic pain was approximately 19% of adults in the European countries studied, and management by pain specialists was rare, seriously affecting the quality of their social and working lives (Breivik, et al., 2006). Very few (2%) were treated by pain specialists and at least 40% reported inadequate pain management: overall conclusions were that chronic pain in Europe is a significant healthcare issue (Breivik, et al., 2006).

A study conducted in the European Union (Langley, 2011) found a similarly high pain prevalence, with one in five adults having moderate to severe pain. Of the 49.7 million population collectively studied in France, Germany, Italy, Spain and the United Kingdom, 11.2 million had severe pain, 29.4 million had moderate pain and 9.0 million had mild pain. The prevalence of daily pain in this European Union population was 8.85%, with 3.47% reporting severe daily pain and 4.70% reporting moderate daily pain (Langley, 2011). The burden of pain was seen in impacts on quality of life and productivity; moreover, Langley et al. (2011) concluded that the high pain prevalence in these European Union countries was a significant social and economic burden for the individuals who had pain, and also for their employers, the countries' healthcare systems and their societies as a whole. Recommendations were that chronic pain should be considered a disease unto itself requiring co-ordinated pain management plans (Langley, 2011). Similarly, another pan-European study, the European Pain in Cancer (EPIC) survey, focused solely on cancer pain (Breivik, et al., 2009). The EPIC survey found very high pain prevalence among 5,084 adult cancer patients in the Czech Republic, Denmark, Finland, France, Ireland, Israel,

Italy, Norway, Romania, Sweden and Switzerland, with 56% having moderate to severe pain and half reporting that their health care professionals did not prioritise pain and its impact on their quality of life (Breivik, et al., 2009). Overall, research has shown that untreated pain is a substantial policy challenge in Europe (Breivik, 2009; Breivik, et al., 2009; Breivik, et al., 2006; Langley, 2011).

2.6.1.3 The Burden of Unrelieved Pain in India

An epidemiological study of the impact of chronic pain in India (Dureja, et al., 2014) investigated point prevalence (prevalence measured at a particular point in time) of chronic pain in that country. Also measured in the study were the impact of pain on quality of life, current pain treatment practices and levels of patient satisfaction with pain treatment. The overall point prevalence of chronic pain was found to be 13% among the 5004 participants from eight cities in India (Dureja, et al., 2014). Moderate pain was reported by 37% and severe pain was reported by 63% of participants. Mean intensity of pain was 6.93 on the Numerical Rating Scale. Conclusions were that a significant proportion of the population of India are chronic pain sufferers, with quality of life affected, often leading to disability (Dureja, et al., 2014). As was noted in similar types of US and European studies, very few of those with chronic pain in the Indian study were under the care of specialists in pain management .

2.7 Pain Management Nursing in Saudi Arabia

The search of the literature conducted to inform the present study found no research conducted in Saudi Arabia to date that measured the overall prevalence or incidence of acute or chronic pain in the ED, nor of the overall social and economic impact of such pain. However, cancer pain prevalence and severity has been explored in a single small study in a tertiary hospital in Saudi Arabia (Al-Zahrani, Eldali, & Al-Shahri, 2014). Among the 124 patients studied, a majority (82.3%) had metastatic disease and most (85.5%) reported pain with a median pain intensity score of 5 on the numerical rating scale and a mean intensity of 4.6. Of those reporting pain, 54 (51%) reported a numerical rating scale score greater than 4. The study confirmed the high prevalence of pain in both new and follow-up cancer patients in the

outpatient setting studied. Recommendations were that further research on a larger scale be conducted to evaluate the magnitude of the problem of pain and to investigate in detail the way pain is assessed and treated within the overall pain management approaches used in Saudi Arabia (Al-Zahrani, et al., 2014).

Pain management in the ED in Saudi Arabia has been investigated in two studies. One of these studies investigated pain management among children suffering from SCD (Rehmani, 2010) and the other investigated pain among adults in the ED (Taha & Rehmani, 2011). The paediatric study conducted in the ED (Rehmani, 2010) investigated pain management for children aged 5 to 18 who suffered from SCD (n=43). Over 270 visits of these participants, the means (with standard deviations in parentheses) for time to analgesia administration, and time to discharge (i.e., length of stay in the ED), respectively, were found to be 42.2 (20.4) minutes and 183.9 (129.3) minutes. Delays in initial administration of analgesics were noted (Taha & Rehmani, 2011). Morphine sulphate, diclofenac and acetaminophen were the most-used analgesics. Routes of administration were primarily intravenous, oral and intramuscular, with a significant finding that “approximately a fifth of patients received their analgesics via an unrecommended intramuscular route” (Taha & Rehmani, 2011, p. 152) .

Rehmani’s (2010) large, single-site, retrospective cohort study is the only adult-based study located in the literature search that has been conducted in the ED in Saudi Arabia. The study analysed pain scores from the medical records of 2199 adult patients who presented to the ED with pain. In this, the Rehmani study differs from the other pain prevalence studies cited above, as the percentage of patients presenting with pain was not recorded. Thus, there is no indication in the literature of pain prevalence in EDs in Saudi Arabia, compared with those in the US and Canada, where most pain prevalence studies have been conducted to date. Results from Rehmani’s (2010) results indicated that 23.5% of those whose pain was noted on medical charts had severe pain while 76.5% reported low to moderate pain. Limitations of the study include the fact that the retrospective study design depended on reviews of medical records and therefore on the diligence of clinicians with respect to following all ED protocols for optimal pain assessments and treatment and completing accurate reports of all aspects of pain management for every patient –

which diligence the author noted was lacking in the ED setting studied (Rehmani, 2010). Nevertheless, the Rehmani study has importance for the present study as one of the very few Saudi Arabian pain studies.

2.8 Conclusion

The literature review in this chapter has examined the many factors that influence the way nurses manage pain in the ED. Issues of interest and concern with respect to the optimal management of pain in the ED include the results of numerous studies in a range of countries around the world, that have found deficits in nurses' knowledge and attitudes regarding pain that contribute significantly to pain undertreatment. Barriers exist. Pain undertreatment in the ED as well as in other settings, remains a worldwide problem. This review of the literature has pointed to a number of key aspects of pain management that are relevant for the conduct of the study and has highlighted the fact that although pain is sometimes well-managed in the ED, optimal pain management overall is widely considered to have been an elusive goal to date.

Chapter Three that follows presents a description of the two-phase sequential explanatory mixed methods design employed in this study. An outline of the methodological approach is provided, along with the rationale for this choice. Chapter Three also presents a detailed description of each of the two phases.

Chapter Three: Methods

This chapter describes the sequential explanatory mixed method approach used to conduct the research project. It explains the methodology, including the research paradigm that guided the research development and the rationale for the use of mixed methods to conduct the data collection and analysis. The chapter explains the processes of instrument development, as well as the setting, sample and strategies used to manage response rate. In addition, the plan for quantitative and qualitative data analysis and the techniques for mixing the two data sets are explained. Finally, there is a description of the strategies used to ensure validity, reliability and rigour followed by the ethical considerations related to the conduct of the research project.

3.1 Aims

The primary aims of the research project were to investigate the knowledge and attitudes of ED nurses, to develop an understanding of what barriers and facilitators they perceive to exist in their pain management practice and to gain insight into the relationship amongst these factors and the way they influence pain management in the ED. The preceding chapter presented a comprehensive review of the historical and current peer-reviewed research literature relevant to pain management nursing. This chapter provides a detailed explanation and justification of the methodology used to explore the research questions, which are outlined below.

The specific research questions that guided the research project were:

1. What are the knowledge and attitudes regarding pain of registered nurses in the ED in Saudi Arabia?
2. What are the barriers and facilitators that these registered nurses perceive affect their pain management practice?

3. What is the relationship between the knowledge and attitudes of ED nurses, their perception of barriers and facilitators to optimal pain management and their pain management practice?

The research project employed a mixed methods sequential explanatory design, with the aim of gaining a deep understanding of the complex phenomenon of ED pain management. No research employing this study design has been previously conducted in the ED, either internationally or in Saudi Arabia. Data from the two phases and the integrated findings enabled the development of recommendations for education, practice and further research.

3.2 Methodological Approach: Mixed Methods

The mixed methods approach was chosen for its potential to contribute insights and understanding to the complex and multi-faceted issue of pain management in the ED setting. Mixed methods research is an approach that includes a combination of aspects from qualitative and quantitative approaches in a single study, based on the research questions posed (Speziale, Streubert, & Carpenter, 2011). There were several reasons for choosing the mixed methods approach. First, a combination of quantitative and qualitative methods facilitated stronger monitoring and evaluation at all stages of data collection and analysis. As well, quantitative data collection and analysis in Phase 1 provided breadth while the qualitative data collection and analysis provided depth. Second, mixed methods strengthen the convincingness of the research project (Carr, 2009; Creswell, et al., 2011; Hesse-Biber, 2010; Ivankova, et al., 2006; Ring, Gross, & McColl, 2010; Small, 2011; Tashakkori & Newman, 2010). Third, mixed methods increased the confidence in the research results by enabling different dimensions of the problem to be considered (Creswell & Plano Clark, 2011). Finally, mixed methods improved both consistency and accuracy of data by providing a more comprehensive picture of the phenomenon under investigation (Johnson, Onwuegbuzie, & Turner, 2007). Therefore, the use of a single method, whether quantitative or qualitative, might have been insufficient for providing a full understanding of the problem under consideration.

Pain management research is a challenging field and a mixed methods approach can provide valuable insights in this multidimensional and complex area of study (Carr, 2009; Kato-Lin, Krishnamurti, Padman, & Seltman, 2014). Although mixed methods is widely used in nursing research, this approach has not been used extensively to investigate pain management. To the researcher's best knowledge, none to date has investigated nurses' knowledge and attitudes regarding pain in the ED nor in Saudi Arabia. Nevertheless, mixed methods is well-suited for investigating pain in the ED, where pain management is a complex problem because the setting is unique in many ways (Buckley, 2014; Papa & Lefton, 2014; Wentzel & Brysiewicz, 2014). Accurate pain assessment and optimal management, which are complex tasks in any setting are made much more difficult by the complex and ever-changing conditions (Lecomte, et al., 2011; Todd, 2008; Wilsey, et al., 2008a; Wilsey, et al., 2008b).. This kind of complex problem is what experts recommend can be studied and understood with mixed methods (Creswell, et al., 2011; Creswell & Plano Clark, 2011; Happ, Dabbs, Tate, Hricik, & Erlen, 2006; Hesse-Biber, 2010; Ivankova, et al., 2006; Tashakkori & Creswell, 2007). In this study, mixed methods were used to provide comprehensive knowledge of Saudi Arabian emergency departments nurses about their pain management. The research was conducted in two phases using a mixed methodology: (a) a survey involving statistical analysis of numerical data elicited from a sample of nurses using questionnaire items, based on numerically scored scales; and (b) the qualitative analysis of the responses of a sample of nurses who participated in semi-structured interviews. The quantitative and qualitative parts of the study required the nurses to answer different questions revealing their knowledge, attitudes and beliefs about pain management in light of the research objectives and questions.

A brief overview of the research design is presented below, followed by the rationale for the choice of the research paradigm and rationale for the research design. Next are detailed descriptions of each of the two phases and of the integrated data analysis. Finally, an explanation is presented of the ethical considerations addressed in the study.

3.3 Research Paradigm

A paradigm can be defined as a framework or a set of basic beliefs that researchers need to get ideas about the nature of reality, to identify the relationship between variables and to specify an appropriate method for conducting research (Neuman, 2011). Mixed methods underpinned by pragmatism has been called a “research paradigm” (Johnson & Onwuegbuzie, 2004, p. 24). Paradigms such as positivism, realism, post-positivism, critical theory and constructivism have also been identified for social science research (Weaver & Olson, 2006). The basic component principles of paradigms are ontology, epistemology and methodology (Neuman, 2011). Ontology is the theoretical body of thought that is concerned with the existence of things and their relationships; it is a theory of what exists in the world (Neuman, 2011). Epistemology is a theory of knowledge or of knowing; its concerns are the origins of our knowledge of reality, with the nature and limits of human knowledge and how things can be made known to investigators (Neuman, 2011). Methodology concerns how the reality of issues is investigated; its concerns are the principles used to reason (Lincoln, Lynham, & Guba, 2011). These principles are usually interconnected, since the researcher who adopts a position on one of the principles is constrained on the position that may be taken on the others (Lincoln, et al., 2011). Therefore, in order to clarify the researcher’s structure of inquiry and methodological choices, an exploration of the paradigm adopted for this study will be discussed prior to any discussion about the specific methods implemented here.

3.3.1 Pragmatism

This mixed-method research project is underpinned by pragmatism, or the pragmatic paradigm. Pragmatism is often recommended as a suitable underlying philosophical orientation for mixed methods designs and is used as such in much of the mixed-method research conducted currently, including nursing research (Biesta, 2010; Denscombe, 2008; Feilzer, 2010; Hesse-Biber, 2010; Hope & Waterman, 2003; Maxcy, 2003; Morgan, 2007; Tashakkori & Newman, 2010; Teddlie & Tashakkori, 2012). Any paradigm used to underpin a research project, including pragmatism, involves a set of the assumptions about how the knowledge will be obtained within the research design. Pragmatism’s strength is that it enables the mixed methods

design to be distinct from designs that are entirely quantitative, or entirely qualitative and to provide an alternative, or third paradigm (Denscombe, 2008; Johnson & Onwuegbuzie, 2004; Maxcy, 2003; Rossman & Rallis, 2003). The philosophy of pragmatism derives from the writings of Peirce, Dewey and James in the 19th and early 20th centuries and Rorty in the late 20th century. (Greene, 2008; Johnson & Onwuegbuzie, 2004; Morgan, 2007). Dewey (1929) called his pragmatic philosophy “empirical naturalism” (p. ii). Numerous scholars in the emerging field of mixed methods research suggest that Dewey’s theoretical ideas about pragmatism provide a highly suitable epistemological foundation for mixed methods (Greene, 2008; Johnson & Onwuegbuzie, 2004; Morgan, 2007). Dewey advocated for research that emphasised (a) actual behaviour, (b) the beliefs that underlie the behaviours and (c) the consequences of the behaviours (Dewey, 1929). These categories still form the basis of the pragmatist philosophical approach to mixed methods research (Johnson & Onwuegbuzie, 2004). Moreover, they resonate with the aims of this mixed methods research, which explores (a) nurses’ actual behaviour while managing pain and (b) the knowledge and attitudes (and beliefs) that underlie their behaviours and (c) the consequences for their nursing practice.

Based on the above-mentioned information and the need for this study to answer its research questions, this paradigm was deemed appropriate for use in this study. As the philosophical foundation for this mixed methods research, pragmatism connected epistemological, ontological methodological concerns with the nature of the knowledge that the research was seeking and concerns about the bridging the two data collection methods used in the research (Biesta, 2010; Greene, 2008; Hope & Waterman, 2003; Maxcy, 2003; McKinstry, 2000; Morgan, 2007; Tashakkori & Creswell, 2007). This philosophical and methodological foundation for the research added to the strengths of the mixed methods approach in bridging the methodological differences between positivism and naturalism; between quantitative and qualitative paradigms (Biesta, 2010; Greene, 2008; Hope & Waterman, 2003; Maxcy, 2003; McKinstry, 2000; Morgan, 2007; Tashakkori & Creswell, 2007).

3.3.2 Rationale for the Sequential Explanatory Mixed Methods

Research Design

Once a mixed methods approach was chosen, several specific factors had to be considered in choosing a design. A literature review did not find any mixed methods research to have previously been conducted to study nurses' knowledge and attitudes regarding pain in the ED. One set of research studies, however, had employed the mixed methods sequential explanatory design to research on pain management in an acute, post-operative clinical setting (Carr, 2000; Carr, Brockbank, Allen, & Strike, 2006; Carr, 2009). These researchers subsequently recommended the design for its capacity to address the complex problem of pain management such as they had investigated and noted that it is a design that lends itself to the development of understanding and insights, particularly when it is desired to influence and improve practice (Carr, 2009).

This particular design is also well suited to circumstances in which little preceding research has been undertaken (Carr, 2009; Covell, Sidani, & Ritchie, 2012; Ivankova, et al., 2006; Newton, Chandler, Morris-Thomson, Sayer, & Burke, 2014; Onwuegbuzie, 2012; Small, 2011; Teddlie & Tashakkori, 2012). The sequential explanatory design with quantitative priority and follow-up qualitative phase was considered to be ideal since little was previously known about nurses' pain management in the ED in Saudi Arabia. The choice of implementing the two phases sequentially rather than concurrently and to give priority to the quantitative phase was driven by the research problem. As Tashakkori and Teddlie (2003) have noted, a design with quantitative priority with a follow-up qualitative phase is well suited to circumstances in which little preceding research has been undertaken and so not a lot is yet known. In addition, when the purpose of interviews is to provide a deeper understanding of the findings obtained from the survey, it is appropriate to collect the data sequentially, with the quantitative portion conducted first, followed by the interviews (Carr, 2009; Ivankova, et al., 2006; Kroll & Neri, 2009; Newton, et al., 2014).

The design thus suited the circumstances and context of the study because as the literature review noted, while nurses' knowledge and attitudes regarding pain and the

barriers and facilitators to pain management have been noted in many parts of the world, there is less known about knowledge and attitudes in the ED setting and there is, moreover, a substantial paucity of knowledge regarding the ED in Saudi Arabia. Another motivation was that the design allowed for the use of integrated analysis at various points that led to a deeper understanding of the phenomenon and helped to explain similarities between the data sets as well as differences and inconsistencies (Creswell & Plano Clark, 2011; Creswell, Plano Clark, Guttman, & Hanson, 2003; Happ, et al., 2006; Ivankova, et al., 2006; Johnson & Christensen, 2004; Johnson & Onwuegbuzie, 2004). That is, the goal of the integration (mixing) of the two types of data was not merely to seek corroboration, but rather to expand understanding and produce deeper knowledge of nurses' knowledge and attitudes regarding pain in the ED, than either method would provide on its own (Andrew, Salamonson, & Halcomb, 2008; Bazeley & Kemp, 2012; Houser, 2012; Onwuegbuzie, 2012; Teddlie & Tashakkori, 2012).

3.4 Overview of the Research Design

The specific mixed methods research design chosen for the study was sequential explanatory with a quantitative emphasis (Biesta, 2010; Feilzer, 2010; Hope & Waterman, 2003; Morgan, 2007).. The sequential explanatory mixed methods design followed in the study involved Phase 1: collecting and analysing quantitative data, followed by Phase 2: collecting and analysing qualitative data (Bazeley & Kemp, 2012; Covell, et al., 2012; Creswell, et al., 2011; Creswell, et al., 2003; Hesse-Biber, 2010; Ivankova, et al., 2006; Small, 2011; Teddlie & Tashakkori, 2012). Figure 1 below illustrates the application of this research design to the conduct of the study.

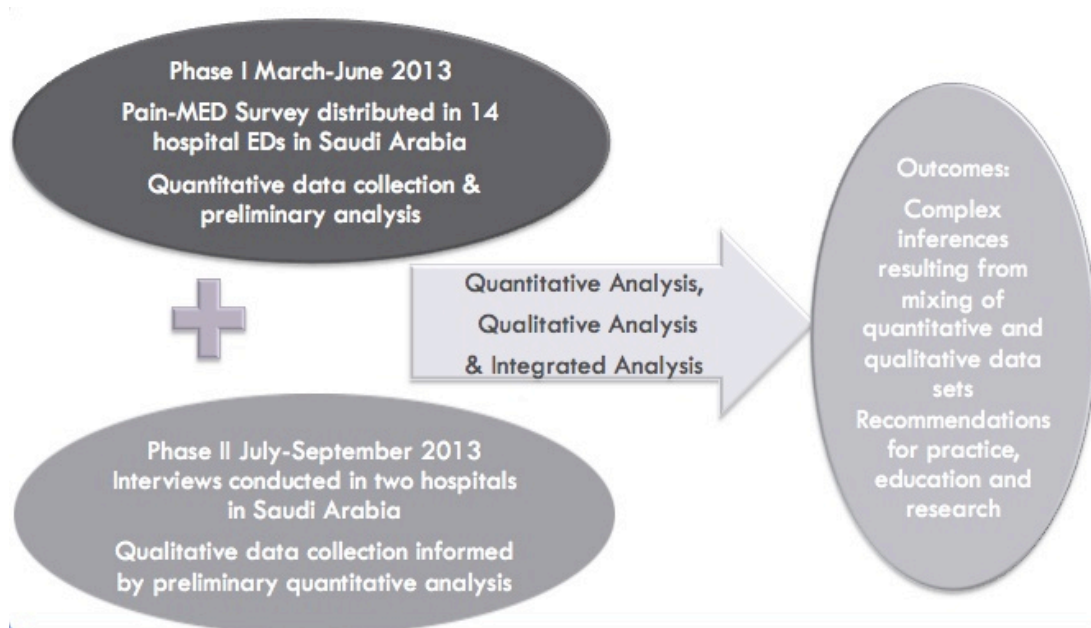


Figure 1: Application of Sequential Explanatory Mixed Methods Design

Based on the researcher's best knowledge, there is a scarcity of research on the knowledge and attitudes of RNs in Saudi Arabian emergency departments in relation to pain management. Therefore, the current research utilised a mixed methods sequential explanatory design that involved collecting and analysing quantitative and qualitative data in two consecutive phases within one study. This is a research design that is commonly underpinned by the pragmatic paradigm (Creswell, 2009; Creswell & Plano-Clark, 2011).

The following two sections outline Phase 1 and Phase 2 of the research. The first section describes Phase 1, the quantitative phase using the cross-sectional PAIN-MED survey; the next section describes Phase 2, the qualitative phase consisting of semi-structured interviews. In each phase, the method: instrument development, data collection, setting, sample, and data management and analysis are described in detail.

3.5 Phase 1: The PAIN-MED Survey

This research project was constructed so as to implement a cross-sectional survey to conduct Phase 1 of this two-phase sequential explanatory study. Knowledge, attitudes and beliefs of EDs nurses towards pain management in Saudi Arabia were

assessed and examined by employing this descriptive self-report, cross-sectional survey. The reasons for use of the survey method and the rationale for choosing a cross-sectional survey are given below.

3.5.1 The Survey Method

The survey design was chosen as it provided a quantitative description of trends, attitudes or opinions of the population by studying a sample of that population (Creswell, 2009). After conducting the extensive review of literature and examining the efficacy of survey tools adapted for the PAIN-MED survey (the Knowledge and Attitudes Survey Regarding Pain (KASRP) (Ferrell & McCaffery, 2012) and the Barriers to Optimal Pain Management (BOPM) developed by Vincent (2005), described below), undertaking a non-experimental descriptive survey design was considered the most appropriate method for acquiring the data necessary to answer the research questions for this particular topic. The survey is a non-experimental, descriptive research method, which can be a powerful and useful way to collect data.

There are several different ways to conduct a survey. The most common methods are sending written surveys through the mail or hand-distributing them through a network, asking survey questions over the telephone or conducting face-to-face interviews. Surveys have traditionally involved pencil and paper methods but the proliferation of computers and access to the World Wide Web has led to the internet being a popular means of collecting survey data (Couper, 2011; Teddlie & Tashakkori, 2009). A paper-based format was preferred for this survey over an online format because it was anticipated that not all potential survey participants would be comfortable with the use of technology (Etchegaray & Fischer, 2010). There are a number of issues related to confidence in and accessibility of internet access in KSA (Warf, 2011; Warf & Vincent, 2007). All communications in KSA are under very strict government control, as noted on the website of the Royal Embassy of Saudi Arabia (Royal Embassy of Saudi Arabia, 2014a, 2014b). Although internet access is available to approximately two-thirds of Saudis (Royal Embassy of Saudi Arabia, 2014a), reliance on the Internet for communication and information is neither universally accepted nor widespread (Warf, 2011; Warf & Vincent, 2007). Thus, paper-based surveys, although more expensive and less easily distributed than online

surveys, were deemed to be necessary in the study setting. Hand-distribution of the survey by the researcher travelling in person to all the hospitals allowed her to build relationships to encourage engagement and participation (Fink, 2003; Vogt, 2011).

It is important here to mention cultural reasons why the researcher conducted many face-to-face meetings with the key persons (i.e., the Head Nurses (HNs), Directors of Nursing (DONs) and senior nurses). This step was crucial to increase the responsiveness of the nursing managers and to understand fully the purpose of this study because in the Saudi culture, when one asks a person for a favour face-to-face, that person would feel obliged to assist in any way possible. The researcher is part of this culture and understands that face-to-face meetings would improve the response rate and would encourage better follow-up by those key persons and thus this step was adopted. In addition, the literature reports extremely weak response rates for surveys that did not have a follow-up by the researcher through visits and meetings, and improved response rate when follow-up was undertaken (Fan & Yan, 2010).

The survey method was chosen for several reasons. Firstly, a survey of this type was deemed an economical and efficient way of covering a study population that was geographically dispersed across Saudi Arabia. Secondly, the choice of using surveys gave the participant full anonymity and confidentiality (Burns & Grove, 2011) which is an important ethical consideration. Moreover, it is an efficient means of collecting a large amount of data about a problem under investigation in a relatively short period of time. Finally, the choice of using surveys gave the participants an opportunity to choose the time and place that was most convenient to them, to complete the survey (Burns & Grove, 2011). Overall, the survey method was deemed to be flexible in terms of content and allowed the efficient collection of a large volume of data from participants across a large geographical area (Creswell, 2003; Fink, 2003; Houser, 2012; Powers & Knapp, 2011).. In this study a self-administered survey was used; such a method is relatively free of bias on the part of the researcher with the participants usually feeling free to answer as honestly as possible (Burns & Grove, 2009; Sapsford, 2007; Vogt, 2011).

While the data collected in quantitative surveys can be comprehensive and informative, participants are limited to standard responses. The researcher cannot ask for clarification or more detail on a response or provide reasons for non-response

(Dillman, 2007). Thus surveys do not have as great a level of explanatory power as qualitative methods (Fink, 2003; Houser, 2012; Powers & Knapp, 2011). Quantitative surveys typically are not able to investigate complex aspects of behaviours under investigation and in addition there is the possibility of misinterpretation of questions by participants (Fink, 2003; Houser, 2012; Powers & Knapp, 2011). In a mixed methods study, however, the qualitative component offers the researcher opportunities to explore such areas in depth with interviewees.

3.5.2 The Cross-Sectional Survey

In surveys, participants may be studied using a cross-sectional or a longitudinal approach. In cross-sectional surveys, participants are studied at one point in time whereas longitudinal surveys follow participants over an extended period of time (Nieswiadomy, 2002). The cross-sectional design was utilised in the current study for several reasons. The purpose of Phase 1 of the study was descriptive, for which a cross-sectional survey is suitable (Connelly, 2009; Coughlan, Cronin, & Ryan, 2009). In addition, a cross-sectional survey does not necessarily require a hypothesis, as it lends itself to non-experimental design (Biemer & Lymer, 2003; Burns, Wang, & Henning, 2011; Fink, 2003).

A cross-sectional survey method was suitable for Phase 1 in which the aim included assessing participants' knowledge and attitudes by determining how many of the study population could achieve satisfactory scores on the KASRP portion of the survey; to what extent their scores varied across various groups or characteristics in the sample; and to determine if certain score levels were associated with various characteristics (Burns, et al., 2011; Connelly, 2009; Coughlan, et al., 2009; Levin, 2006). This cross-sectional survey provided a 'snapshot' of the knowledge and attitudes of the participating RNs and the barriers and facilitators they encounter in the ED, at a particular point in time (Biemer & Lymer, 2003; Burns, et al., 2011; Connelly, 2009; Coughlan, et al., 2009; Fink, 2003; Levin, 2006). Finally, a cross-sectional survey was expedient because time and budget constraints for the research were best suited to a short, time-limited research method such as the cross-sectional survey, which can be cost-effective as it can be completed in a short time (Biemer &

Lymer, 2003; Burns, et al., 2011; Connelly, 2009; Coughlan, et al., 2009; Fink, 2003; Levin, 2006).

3.5.3 Instrument Development

The cross-sectional survey used to conduct this study was adapted from two instruments identified in a search of the literature. They were: the Knowledge and Attitudes Survey Regarding Pain (KASRP) (Ferrell & McCaffery, 2012) and the Barriers to Optimal Pain Management (BOPM) developed by Vincent (2005). No piloting was deemed necessary because reliability and validity were previously established for the KASRP (Ferrell & McCaffery, 2012) and content validity and internal consistency were established for the BOPM (Vincent, 2005). The use of reliable and valid previously-existing scales is recommended because to do so is economical and efficient (Dillman, 2009).

An open letter addressed to nursing researchers and appended to the KASRP survey document (Ferrell & McCaffery, 2012) grants approval for use and adaptation of the KASRP to those who wish to use it. Approval for use and adaption were sought and obtained for the BOPM (Vincent, 2005) from its author.

The survey instrument used in the present research project was entitled the Pain Management in the Emergency Department (PAIN-MED) Survey; it consisted of 57 items divided into three parts. Part I (Demographics) comprised 12 items written by the researcher specifically for use in the Phase 2 study. Part II: Knowledge and Attitudes Regarding Pain, comprised 40 items adapted from the KASRP (Ferrell & McCaffery, 2012); and Part III (Barriers to Pain in the Emergency Department) comprised five items, adapted from the BOPM (Vincent, 2005). The Phase 1 survey instrument is located in the thesis as Appendix A. A description of the component parts and adaptation of individual items is detailed below.

Part I of the survey consisted of 12 items to determine the participants' personal and demographic characteristics. These items collected data related to age, gender, range and type of participant's work experience, educational background, types of pain management training they had received and aspects of their current working conditions such as the number of hours worked per week on average and whether

they worked in more than one ED. These data have been collected for most of the international studies that have used the KASRP and collecting these data allowed for comparison of the present study with the results of these other studies.

Part II of the survey tool comprised the adapted KASRP instrument (Ferrell & McCaffery, 2012). The KASRP was designed in English and was originally derived from research studies written in English (Ferrell & McCaffery, 2012). Since English is the language of communication for the ED in Saudi Arabia, an English-language survey was suitable. The KASRP is comprised of 22 true-false items, 14 multiple-choice items and four items related to two case study vignettes.

The specific adaptations made for use in the ED in Saudi Arabia included the following: the inclusion of an item from the 2008 version of the KASRP (Ferrell & McCaffery, 2008) that was dropped from the 2012 version (Ferrell & McCaffery, 2012), the addition of a proprietary name for an analgesic medication, a name change in the case study vignettes, and re-numbering of the items. The following are the details of the changes made in adapting the KASRP for use in the PAIN-MED survey:

1. Item 23 of the PAIN-MED survey asked participants to decide whether a statement regarding a dose ceiling for morphine was ‘true’ or ‘false’; this item from the 2008 version of the KASRP was included although it was not included in the latest version of the KASRP, as revised in 2012.
2. In item 42, because Motrin™ is known as Bufren™ in Saudi Arabia, the alternative name ‘Bufren’ was added, to reflect this common usage in the study setting.
3. The names of the patients in the case study vignettes (items 49-52) were changed in items 49 and 50. ‘Andrew’ was changed to ‘Abduallah’ in item 49 and 50 and Robert was changed to Ahmed in items 51 and 52 to reflect local usage in Arabic settings.

4. The item numbers were changed in the PAIN-MED survey so that the KASRP items were consecutively numbered following the demographic items in Part I. Thus, item 1 of the original KASRP survey became item 13 in the PAIN-MED survey, item 2 in the original became item 14 in the PAIN-MED survey, and so on.

Neither the order nor the wording of the original KASRP items were changed with the exception of the changes noted above.

Part III of the survey consisted of five items. The first item (#53) related to respondents' confidence in pain management, and the second item (#54) related to their opinion about the adequacy of pain management their EDs. The third (#55) and fourth (#56) items were, respectively, checklists of 'Barriers to optimal pain management in the ED' and 'Facilitators to optimal pain management in the ED'. The final item (#57) was an open-ended question. The first, second and fifth items were developed based on review of the literature. Several studies were identified that supported the survey item regarding confidence in pain management and the use of a Likert scale for the first and second items in Part III (Grant, Ferrell, Hanson, Sun, & Uman, 2011; Shugarman et al., 2010). The lists of barriers and facilitators were adapted from the original BOPM (Ferrell & McCaffery, 2012; Vincent, 2005), which was designed for the paediatric setting. The phrasing of barriers referring to "children" in the original survey was changed to refer instead to "patients" and a reference to "parents" was changed to "relatives". The facilitators were not part of the original BOPM (Vincent, 2005) but were rephrased from a negative to a positive connotation; for example, "limitations in my ability to assess pain" from the barriers list was rephrased as "my skills in assessing pain". Participants were asked to check as many barriers and facilitators as they felt applied to them.

3.5.4 Data Collection

Surveys were distributed to all the EDs in participating hospitals in Saudi Arabia. HNs and DONs made the surveys available to the RNs working in their departments. This was a requirement because, although this arrangement was unusual given the ethical considerations with respect to anonymity and confidentiality, this distribution method was required by the hospitals' ethical approval committees and by the

hospital administration. Participants placed completed surveys in a sealed envelope and deposited them into the secure locked box, which was provided to each ED.

During the data collection period, the researcher called the HNs and DONS of each hospital every 2-3 days to check on returned surveys. In addition, the researcher travelled to all the hospitals to pick up surveys as follows: in Jeddah, any completed surveys were collected each weekday; in Makkah, surveys were collected every 1-2 weeks and in Taif and Riyadh, surveys were collected every 2-3 weeks.

3.5.5 Setting

The setting chosen for this study was Saudi Arabia and hospitals with an ED. The reason for this is the researcher's experiences caring for patients with pain in the ED of a large university teaching hospital in Saudi Arabia. The researcher's interest in pain management nursing arises from personal experiences during years of clinical practice, as well as from the appreciation gained about the crucial role nurses have in the treatment of pain in the emergency setting. This research is the result of a strong desire to contribute to improved patient care through further understanding, insight and knowledge of pain management nursing in emergency care in Saudi Arabia.

The 12 hospitals chosen specifically were those with EDs in four cities: Jeddah, Makkah, Riyadh and Taif. In this study it was considered important for rigour that the study include hospitals that were fully representative of the public-sector hospitals overseen by the Ministry of Health, the Armed Forces and the Ministry of Higher Education and also to represent the range of services that is offered locally in various geographic locations in the country. Private-sector hospitals were not included as these provide healthcare services primarily on corporate insurance schemes to temporary foreign workers in Saudi Arabia (Ministry of Health of the Kingdom of Saudi Arabia, 2011, 2013b; Ministry of Health of the Kingdom of Saudia Arabia, 2012). The representativeness of selected hospitals is as follows: there were three hospitals in Riyadh, the capital and largest city in Saudi Arabia with a population over 5 million, located in the eastern part of the country; five hospitals from Jeddah, the second-largest city with a population of approximately 3.5 million, located on the west coast) (Colliers International, 2012). Primary, secondary and tertiary healthcare services are concentrated in these two cities as part of the Saudi

Arabian government's overall healthcare plan (Ministry of Health of the Kingdom of Saudia Arabia, 2012). The smaller cities of Taif (population approximately 500,000) and Makkah (population approximately 1.5 million) have a lower concentration of healthcare services immediately available locally (Colliers International, 2012). One of the selected hospitals was in Taif and three were in Makkah. The Holy City of Makkah provides most health care services that may be required when more than three million pilgrims visit the Holy City in the performance of Hajj (Ministry of Health of the Kingdom of Saudi Arabia, 2011, 2013a, 2013b; Ministry of Health of the Kingdom of Saudia Arabia, 2012). Of the hospitals selected for inclusion there were two National Guard hospitals, one Armed Forces hospital and one Security Forces hospital, one university hospital and among the Ministry of Health hospitals there were two general hospitals, one medical centre, one specialty hospital and three hospitals whose focus is healthcare for Hajj pilgrims (Ministry of Health of the Kingdom of Saudi Arabia, 2011; Ministry of Health of the Kingdom of Saudia Arabia, 2012).

3.5.6 Sample

Participants in the study were purposefully selected because of the nature and aim of the research. Non-probability sampling techniques, such as purposeful sampling are valuable for use in research that follows qualitative, mixed methods and even quantitative research designs (Collins, 2010). In purposeful sampling, the researcher selects information-rich cases to enable a phenomenon to be studied in depth (Creswell & Plano Clark, 2011).

Using this sampling method, the researcher specified the characteristics of a population of interest and then located individuals who fit those characteristics (Polit & Beck, 2008). The researcher's identified population of interest was RNs and the characteristic of interest was that they were working in the ED in Saudi Arabia. Sampling this population purposefully allowed the researcher to obtain specific and relevant information about pain management in EDs in the aforementioned hospitals, from the perspective of registered nursing staff. This particular sampling method was best suited to address the research question (Hennink, Hutter, & Bailey, 2011).

The researcher as well as the HNs and DONs at participating EDs made an effort to ensure that all RNs who were employed in the ED during the study period knew they were eligible to participate. The HNs and DONs, who had previously indicated their support for the research by giving their permission for the researcher to distribute the survey to their EDs, indicated they would encourage their staff to participate. Approximately 45% of nurses working in Saudi Arabia are non-Saudi and approximately 55% are of Saudi nationality and 79% are female (Ministry of Health of the Kingdom of Saudi Arabia, 2012).

All nursing staff members employed in the target EDs during the study period were invited to participate in the study. However, specific inclusion criteria for staff were RN certification and the ability to read, write and comprehend English. The inclusion criteria were fulfilled by 1440 nursing staff.

3.5.7 Strategies for Managing Response Rate

Significant efforts at recruitment were used to obtain as high a response rate as possible and additional strategies to help ensure a satisfactory response rate in this study included presentation and format, credibility, pre-notice, and appeals as noted in the literature (Allen, Schewe, & Wijk, 1980; Childers, Pride, & Ferrel, 1980; Dillman, 1978, 2007, 2009; Frohlich, 2002; Rolstad, Adler, & Ryden, 2011). These strategies are described in detail below. Managing the response rate is an important consideration as surveys with low response rates may be subject to concerns about bias from non-response (Dillman, 2009; Etchegaray & Fischer, 2010; Frohlich, 2002; Stoop, 2005).

3.5.7.1 Recruitment

Prior to commencing data collection and adhering to Saudi Arabian cultural and health hierarchical practices, DONs and HNs in all selected hospitals were informed of the research and all relevant issues were discussed. Copies of the questionnaire, information sheet, ethical approval letters and consent forms were made available to them. Questions and feedback were encouraged from the DONs and the HNs.

Once any questions the DONs and HNs had were answered and they were satisfied with the ethical approvals and arrangements that had been made with the hospitals for conducting the research, the DONs and HNs supported the researcher in several ways: they offered feedback to the researcher about how recruitment might best be conducted within each ED setting; arranged a meeting with their nursing staff; encouraged the staff to attend these meetings and organised meeting times for the researcher to talk to groups of staff. The HNs also advertised the project to potential participants on the hospital notice boards and on the notice boards in the staff's tearooms. Meetings were held with nurses from each of the twelve hospitals at mutually convenient times. These meetings were held during the 'handover' period between morning and afternoon shift and also at handover between night and morning shift in order to make contact with the largest possible number of staff.

3.5.7.2 Presentation and Format

The presentation and format of the survey were addressed during the survey development because these affect survey length and ease or difficulty of completion (Dillman, 2009; Etchegaray & Fischer, 2010). The demographic component was presented in Part I since this was an easy beginning point for participants. Research indicates that if the start of a survey seems easy to complete, then once participants have begun to fill out the survey, they tend to continue (Frohlich, 2002). Presentation and arrangement of the subsequent sections followed those of the survey tools from which they were adapted (Ferrell & McCaffery, 2012; Vincent, 2005). The survey as formatted for distribution was eight A4 pages long. Attention to formatting was undertaken, such as adequate space between questions and creating an uncluttered look, to ensure the nurses' perception of the effort required to complete the survey would not outweigh its perceived relevance to them (Frohlich, 2002). Experts in survey development reviewed the document's presentation and length so the survey would be attractive, accessible and easy to read and fill out. These measures can improve response rate when the effort expected to complete survey is considered to be high (Dillman, 1978, 2007; Frohlich, 2002). Attention was also given to total length, as some researchers contend that the longer the survey, the lower the response rate is likely to be; the literature suggests that eight pages was within a range length that was unlikely to have a substantial effect on participation (Burchell & Marsh, 1992; Sahlqvist, et al., 2011).

3.5.7.3 Credibility

Logos for the supporting institutions were prominently displayed on the survey, information sheets and posters, ensuring an official look for the survey documents to build credibility in the study (Dillman, 1978). Participants were also aware that their hospitals had granted ethical approval and were therefore in support of their staff participating in the study.

3.5.7.4 Pre-notice and Appeals

The researcher sent letters ('pre-notice') (Frohlich, 2002), then called to arrange meetings ('appeals') (Childers, et al., 1980; Frohlich, 2002) with hospital directors, DONs and HNs of each participating ED both immediately following ethical approvals and in advance of distributing the surveys. In these meetings, the researcher informed senior administrators about the study and sought their assistance in encouraging the members of his or her emergency department to adopt a favourable view of the study and encourage them to participate. Direct appeals were aimed at gaining favourable perceptions of the study's value and these efforts were therefore aimed at generating a good response rate. Although somewhat time-consuming and expensive, the effort to personally meet with these heads of the EDs to make these appeals was a worthwhile strategy in terms of improving the response rate (Childers, et al., 1980; Frohlich, 2002), since more surveys were returned following these visits.

Use of a poster, also part of the 'appeals' strategy noted in the literature (Childers, et al., 1980; Frohlich, 2002) reminded nurses about the survey and motivated and encouraged them to participate. A poster was a suitable way to appeal to non-responders, who were not identifiable because of anonymity. The poster (Appendix B) was designed to be eye-catching, attractive and readable. Information on the poster was drawn from the information sheet provided with the survey and the poster was approved by the participating hospitals before being posted in the nurses' lounge in the participating EDs. Contact information was included to allow the researcher to be contacted regarding any questions or concerns.

3.5.8 Data Management

Survey data was entered into the IBM Statistics Package for Social Sciences (SPSS) (Version 21.0) (IBM, 2012). Following data entry, each survey was rechecked by the researcher and a random sample of approximately 10% was checked for accuracy by the researcher's supervisory panel.

Each participant was given a unique alphanumeric code, with an upper case letter (A-L) representing the participant's hospital and a unique number representing the order in which the surveys were received, from 1-629. This system is in keeping with the Government of Australia's *National Statement on Ethical Conduct in Human Research (2007) - Updated March 2014* (National Health and Medical Research Council of the Government of Australia, 2014). Within the system, participants were 'non-identified' (National Health and Medical Research Council of the Government of Australia, 2014). The meaning of the term 'non-identified' is that the codes used to label each participant's survey record are in no way connected with any form of identifying information (National Health and Medical Research Council of the Government of Australia, 2014). There was no collection for any of the PAIN-MED survey participants of direct identifiers, such as name, address, postcode information, or telephone number, or of indirect identifiers (those that could identify someone if linked to other information sources that are publicly available) such as information on workplace, occupation or exceptional values of characteristics (e.g. salary or age) (National Health and Medical Research Council of the Government of Australia, 2014). All surveys were submitted anonymously in plain sealed envelopes into a locked drop box provided by the researcher at each data collection location.

3.5.9 Data Analysis

Demographic characteristics were summarised to obtain a description of the sample through the basic descriptive statistics: the frequency, percentage, mean and standard deviation, using the IBM Statistics Package for Social Sciences (SPSS) (Version 21.0) (IBM, 2012). This form of analysis of the data was chosen as the data were primarily ordinal and nominal and the SPSS application is an efficient method of analysing such descriptive statistics (IBM, 2012). Descriptive statistics (means, standard deviations and ranges) were used to describe the demographic variables

such as age, years of experience as RN and in ED and total scores of knowledge and attitudes on pain management. The descriptive statistics used in analysis included frequencies and frequency distributions; also, measures of central tendency were used to summarise the data (Houser, 2012; Loiselle, Profetto-McGrath, Polit, & Beck, 2011). Measures of central tendency were used to identify any outliers and the assistance of an expert statistician was sought to help with robust analyses that could help prevent the distortion that can be caused by outliers (McCoy, Ottenbacher, Sittig, & Etchegaray, 2012).

The total correct scores were computed by adding up the scores for each participant, then converting to percentages. Mean total scores were also calculated for the entire sample. Analysis was conducted to determine total percent KASRP scores for each participant, frequency of correct and incorrect answers for individual KASRP items and those questions participants found to be most difficult and least difficult were individually analysed. Following the recommendations of Ferrell and McCaffery (2012), data from items 13-52 were analysed using percentage of total scores. Their recommendation identifies that many of the items measure both attitudes and knowledge, so it is not possible, they suggest, to categorise or group the questions into knowledge or attitudes domains (Ferrell & McCaffery, 2012). The mean survey scores (total scores) for each participant were calculated. A threshold level of $\geq 80\%$ total KASRP score has been recommended for the KASRP as indicating knowledge and attitudes that support the delivery of adequate pain management and this threshold was employed in this study's analysis (McCaffery & Robinson, 2002).

Also, each of the survey questions was individually analysed to determine correct and incorrect frequencies for answers. Percentages were calculated based on the number of non-missing values, with missing values excluded (UCLA Statistical Consulting Group, 2015). As Ferrell and McCaffrey (2012) recommend, survey questions with very low numbers of correct answers were investigated further. With respect to mean total scores by nursing specialty, age, gender, years as an RN, years in the nursing profession, years of ED experience, highest educational qualification, formal education in pain management and short-course training in pain management, Levene's tests for equality of variances and independent t-test for equality of means were conducted. Additionally, ANOVA and Kruskal-Wallis were conducted for

equality of means with respect to reported levels of confidence in pain management, in relation to total KASRP scores. Listwise deletion was employed to handle missing data in the analysis of confidence in relation to the KASRP mean total scores (Cheema, 2014; Ferro, 2014; Peeters, Zondervan-Zwijnenburg, Vink, & van de Schoot, in press; Van Ginkel, Kroonenberg, & Kiers, 2014).

Frequencies were calculated and tabulated for responses to the Barriers and Facilitators lists, items 55 and 56 in Part III of the PAIN-MED survey. In addition, analysis of the responses provided to the open-ended questions in items 55, 56, and 57, was conducted using the following method: the researcher used printed paper copies of the lists of comments, created sub-categories of related write-in responses and tallied identical, similar and related responses using a system of colour-coding within matrix tables to develop thematic categories.

3.5.10 Validity and Reliability

The internal reliability of the PAIN-MED instrument used in the current study was examined using Cronbach's alpha coefficient (Wood & Ross-Kerr, 2011) and was found to be 0.601.

In order to evaluate the content validity, applicability and suitability of the PAIN-MED, the researcher consulted an expert panel to review and rate the demographic instrument (Part I) created for the study and the two instruments (KASRP, Part II and BOPM, part III) as adapted for use in Saudi Arabia. They were reviewed to ascertain cultural suitability and face validity by four academic nurses in Saudi Arabia and Jordan, all of whom were RNs with extensive Saudi Arabian experience in ED and acute care. Minor changes in wording were made to ensure cultural compatibility and coherence in the Middle Eastern context and also in an effort to achieve face and content validity. Changes were primarily to: (a) the patient names used in the case study to reflect common Saudi Arabian usage rather than the American usage as contained in the original version of the KASRP survey and (b) to the names of analgesics that are referred to by alternative names in different jurisdictions. Next the survey was submitted for critical review to the candidate's supervisory panel, who were academic nursing scholars at an Australian university. These reviewers had substantial experience in developing nursing research surveys, as well as

methodological expertise. They were requested to review the individual items in all four parts of the survey in terms of wording; as well, these experts considered the format and item spacing to maximise readability and ease of completion, while minimising survey length, which may improve response rate (Sahlqvist, et al., 2011). These experts' suggestions with respect to wording and formatting were applied to the survey as a result of this review.

Authors of the KASRP (Ferrell & McCaffery, 2012) established validity and reliability for their survey tool, which was adapted for use in Part II of the PAIN-MED survey. To establish content validity for the KASRP, content was derived from the pain standards of three authoritative bodies: the American Pain Society, the World Health Organization and the Agency for Health Care Policy and Research and subsequently a panel of pain experts reviewed the tool (Ferrell & McCaffery, 2012). Comparisons of scores from nurses with a range of education and expertise, including students, newly graduated nurses and established pain experts established construct validity for the KASRP. Test-retest reliability ($r > .80$) for the KASRP was established by repeat testing of staff nurses ($n=60$). Internal consistency reliability was established ($\alpha > .70$) within both knowledge and attitude domains (Ferrell & McCaffery, 2012). Face and content validity was established by a group of pain management nurse experts who reviewed the items for their relevance to the generalist and pain management specialist.

Content validity of the BOPM barriers section of the instrument was established through a literature review (Vincent, 2005). Material for the original BOPM was drawn from barriers observed during the course of the author's clinical practice and from guidelines developed by the Agency for Health Care Policy and Research (1994) and barriers reported in relevant studies in the literature (Vincent, 2005). In addition, an instrument development scholar and two paediatric nursing experts contributed their expertise during the development. The barriers measure was initially tested with nurses whose backgrounds were similar to potential nurse participants. Internal consistency alpha was 0.86 for the final study sample (Vincent, 2005)

3.6 Phase 2: Semi-Structured Interviews

The semi-structured interviews conducted in this phase of this study made it possible to describe how nurses perceive their experience as ED nurses when managing patients' pain, to achieve insight into the ways that they make decisions and perform patient care and the meanings they assign to these activities.

3.6.1 The Interview Method

Semi-structured interviews were chosen to conduct Phase 2 of this study because the aim of this phase was to obtain insight into the Phase 1 data. This method enabled the researcher to ask questions based on the interview guide that were related to the Phase 1 data; and the flexibility of the semi-structured method allowed participants the freedom to describe their experiences of managing pain in the ED as they wished, to explain what was significant to them and to share the personal meanings that they attached to these experiences (Burns, et al., 2011; Cohen, Manion, & Morrison, 2000; Hays & Singh, 2012). Conversational-style interviews would not have ensured the desired needed coherence between the two data sets, whereas a structured interview would likely produce too substantial a correspondence between the two sets of data and thus would not offer sufficient explanatory power (Covell, et al., 2012; King, 2004; Small, 2011; Warren, 2001).

Participants were able, within the semi-structured format for the interviews, to explain their experiences in their own words; therefore, unexpected and interesting themes could arise during the interview process (Hays & Singh, 2012). Semi-structured interviews are valued as a method because they allow flexibility for the researcher (the interviewer), who can clarify responses and ask probing questions thereby providing opportunity for in-depth exploration of experiences or perceptions (Dillman, 2007). In addition they offer opportunities for participants (interviewees) to reflect and expand upon their responses (Holloway & Wheeler, 2010). Semi-structured interviews also allowed the researcher to follow interesting leads within the narratives, but also to expand on and explore survey findings. The semi-structured interview format was ideal for the mixed-methods study design because of the inherent connection it allowed between the two data sets. This meant that the

researcher was able to note any emerging correlations and correspondences as well as identifying contradictions in the two data sets and to investigate these through additional probing questions and prompts (Covell, et al., 2012; Creswell & Plano Clark, 2011; Happ, et al., 2006; Holloway & Wheeler, 2010; Ivankova, et al., 2006; Morse & Niehaus, 2007).

Interviews thus have considerable value in a mixed methods study but the interview method also has some limitations. In particular, the quality of the data obtained from interviews depends on the interviewer's skill in asking questions that lead to the desired type, depth and quality of responses. Interviews can be considered by some participants to be intrusive, or the interview process may make some participants uncomfortable so that they are unable or unwilling to share information. Interviewees may give answers that do not accurately express their experiences, either intentionally or unintentionally (for example if they are unable to find the words to express themselves) (Hays & Singh, 2012). Given the topic area under investigation the risk of discomfort was perceived to be low, compared to a study that investigated deeply personal subject matter.

Despite these limitations, interviews are a rich source of data and can provide significant information, insights and ideas (Burns & Grove, 2009; Dilley, 2000; Hays & Singh, 2012; Munhall, 2007). The semi-structured interviews conducted in this phase made it possible to describe how nurses perceived their experience as ED nurses when managing patients' pain. Data from the interviews allowed the development of insight into the ways that they make decisions and perform patient care and what meanings they assign to these activities.

3.6.2 Semi-Structured Interview Guide

Following a review of the relevant literature a set of questions and prompts was developed to provide a basic framework for the interviews; this guide is provided as Appendix C. The questions in the interview guide were reviewed and revised as the data collection progressed to allow the interviews to further explore issues raised from the preliminary analysis of survey data. In keeping with the semi-structured format, the interviewer used the questions as a guide only rather than as a script (Dilley, 2000; King, 2004; Warren, 2001).

3.6.3 Sample and Setting

Participants in Phase 2 were purposefully selected because of the nature and aim of interviews. This sampling strategy enabled the researcher to obtain rich data about the phenomenon from the perspective of registered nursing staff. This purposeful sample was best suited to address the research question in depth (Hennink, et al., 2011). In purposeful sampling, the researcher specifies the characteristics of a population of interest and then tries to locate individuals who fit those characteristics (Polit & Beck, 2008). Demographics of interview participants were collected as follows: age, gender, position at current ED, length of employment in current position, educational qualification, nursing specialty (if any). The demographic characteristics of the phase 2 participants are described in section 5.1.

Two hospitals of the 12 used in Phase 1 data collection were selected as the setting for data collection in Phase 2. These hospitals were selected pragmatically, based on a number of criteria. First, their geographic location was convenient for the researcher who needed to travel to the hospitals for interviews on a regular basis. Second, these two facilities were the first two to grant ethical approval and subsequently were also the first two at which staff indicated their willingness to participate in Phase 2 by contacting the researcher to arrange appointments for interviews as per the contact information supplied on the recruitment poster displayed in participating EDs in Phase 1 (see Appendix B), as well as in the Phase 1 Participant Information Sheet (Survey) (see Appendix E) and the Phase 2 Participant Information Sheet (Interviews) (see Appendix F). Finally, the two participating hospitals were deemed appropriate for selection based on their size and the fact that one was located in a large city and the other was located in a small city. Fourteen of the volunteers were interviewed before it was perceived that data saturation was achieved; that is, no new information was being revealed by subsequent interviews (Francis, Johnston, Robertson, Glidewell, Entwistle, Eccles, & Grimshaw, 2009; Mason, 2010; Saumure & Given, 2008).

3.6.4 Participant Recruitment

Phase 2 participant recruitment was conducted following the completion of the Phase 1 survey data collection, with a subset of Phase 1 participants. All participants from

Phase 1 were asked if they were willing to participate in a semi-structured interview for Phase 2. If they agreed to be interviewed, they were provided with the researcher's contact details for further communication. Contact information was provided on the heading of the survey instrument (Appendix A) as well as on the promotional poster (Appendix B). Upon making contact with the researcher, arrangements were made for optional interviewees to receive information about the interviews, to discuss any questions or any concerns, and if agreeable, to schedule a convenient interview time.

3.6.5 Data Collection

The interviews were held by the researcher, in a room away from the ED that was free of distraction. At the beginning of the interview, each participant was required to sign the consent form together with the researcher (see Appendix G). All interviews were digitally audio-recorded and field notes were made during each interview (Dilley, 2000; Halcomb & Davidson, 2006; King, 2004; Warren, 2001). Interviews were conducted in English, as this is the professional language in use in Saudi Arabian EDs (Ministry of Health of the Kingdom of Saudi Arabia, 2013a). The interviews were conducted with participants in their own hospitals which was a naturalistic setting as is recommended for interviews (Hays & Singh, 2012). The researcher conducted the interviews, following the interview schedule previously described (Appendix C).

3.6.6 Qualitative Data Management and Analysis

To facilitate qualitative data analysis, all interviews were audio recorded and transcribed verbatim by a professional transcription service. The researcher checked the transcription accuracy by re-reading the printed transcripts while listening to the recordings (Halcomb & Davidson, 2006). Transcripts were then hand-coded using a process of thematic analysis as described by Braun & Clarke (King, 2004; Warren, 2001). Thematic analysis, when used for analysing qualitative data, involves the researcher organising and describing the data before identifying and reporting themes (2006). This type of qualitative data analysis was applied in the current study

because of its flexibility in that it lacks theoretical restrictions, such as the constraints that apply in the use of grounded theory, for example (Braun & Clarke, 2006).

According to Braun and Clarke (2006), the thematic analysis method has six main phases, and the researcher followed the guidelines for this type of analysis as described by these scholars. In the first analysis phase, the researcher became familiar with the data by listening to the interviews and then reading the transcripts while actively searching for meaning and seeking patterns. A close line-by-line reading while annotating paper copies of the transcripts ensured that as many ideas and concepts as possible were identified (Braun & Clarke, 2006).

In the second analysis phase, significant phrases and words were highlighted and initial codes were proposed and noted. This process resulted in a large number of significant statements, which were reviewed by the researcher's supervisory panel members as part of the process of ensuring rigour (Braun & Clarke, 2006; Holloway & Wheeler, 2013). The third analysis phase consisted of the challenging process of organising the codes generated in the second phase into thematic categories, including overarching themes and sub-themes (Braun & Clarke, 2006). This was accomplished by first inserting text extracts and themes into a matrix table for consideration and subsequently, by mapping emergent sub-themes and themes into web diagrams (Braun & Clarke, 2006). The fourth analysis phase consisted of reflecting on whether the organisation of the material into emergent themes had validity with regard to the data set and to what extent these themes accurately represent the meanings in the data (Braun & Clarke, 2006). This process involved extensive reorganising and renaming of themes and sub-themes and performing such recoding as seemed necessary (Braun & Clarke, 2006). In the fifth analysis phase, each theme was examined to determine what aspect of the data it seemed to represent or to "capture" (Braun & Clarke, 2006). This was followed by identifying what was interesting about each of the groups of thematically-categorised extracts from the interviews and beginning to write a narrative that explained what the significance of the themes and sub-themes was and formulating ideas about why (Braun & Clarke, 2006). Names for the themes were finally determined at this point in the analysis (Braun & Clarke, 2006). The sixth analysis phase involved the writing of the report of the results obtained through the qualitative data analysis. The report organised the

thematic analysis into an account of the ‘story’ the data represented, both within and across them (Braun & Clarke, 2006). Evidence in the form of text extracts to illustrate the various themes were identified and placed within the developing narrative argument (Braun & Clarke, 2006).

3.6.7 Interview Quality, Validity and Trustworthiness

In this study, interview quality was ensured through a number of strategies. The questions and prompts in the interview guide were developed during a series of practice interviews with academic experts who acted as ‘interviewees’. In addition, another expert sat in on these practice interviews as observer. Through this process, the researcher was able to enhance her interview skills. The strategies employed during the interviews included probing and prompting to encourage participants to elaborate on their responses; acknowledging the relationship between the researcher and the participant; ensuring that the setting for the interview was neutral and relaxing for the participant; and sensitivity on the researcher’s part to notice when the interview has gone on long enough to obtain rich data but not to continue if the participant shows fatigue, distress or other kinds of discomfort (Holloway & Wheeler, 2010).

Validity was addressed by ensuring the accuracy of data collection and analysis so that the researcher accurately represented the experience of those studied (Neuman, 2011). To ensure the accuracy of the collected data in the current study, the researcher read the transcript again carefully to identify significant information. Audio recordings were listened to attentively and matched with the corresponding transcript. In addition, the researcher asked another person to check the transcriptions against the original recordings of the interview audio data (Silverman, 2011).

Content validity for the study was ensured by achieving data saturation; this was achieved by the researcher through ensuring that the questions asked were effective in eliciting participants’ views and experiences with respect to pain management in the ED in Saudi Arabia and by tabulating the data and noting the point at which no new conceptual or thematic categories were being introduced into the tables (Francis, et al., 2009). Data saturation is a concept that was first introduced with respect to

qualitative data collection as a means of ensuring content validity of the sample (Francis, et al., 2009).

Pragmatic validity for the study is an indication of the study's results having relevance beyond the study group. Three types of validity addressed in the qualitative data collection phase were descriptive, interpretive and theoretical (Holloway & Wheeler, 2010). Descriptive validity was ensured by using digital audio recorders during the interviews, carefully transcribing them and with the support of field notes. The descriptive information was collected with care and corroborated by checking with the participants during the semi-structured interviews that comprised the qualitative data collection phase (Johnson & Turner, 2003). Interpretive validity was ensured by accurately representing the meaning and the views of the participants, who represent the insider (or 'emic') perspective and that the researcher did not impose her own perspective (the outsider, or 'etic' viewpoint) on the interviewees or on her field notes (Johnson & Turner, 2003). This was achieved by discussing coding and themes with expert advisors during the qualitative analysis process. Theoretical validity was ensured by developing a good fit between the data and the theoretical explanation of the data (Johnson & Turner, 2003) in the integrated analysis phase and discussing the emerging results with expert advisors.

3.6.8 Rigour

Rigour has been defined by Grbich (1999) as "the researcher's attempt to use as tight a research design as possible" (p. 61). Accordingly, the researcher in the current study has adopted the necessary steps in designing, conducting and then presenting the research method and data collection to ensure rigour. Additional efforts were taken during the process of collecting data during the semi-structured interviews, followed by similar steps during the analysis of transcripts and reporting of emerged themes, so that these findings could be presented in an accurate, transparent and trustworthy manner. Rigour determines that the qualitative researcher is required to conduct the study to a high standard by seeking details, by being accurate and by searching for data that are trustworthy and credible (Holloway & Wheeler, 2013). Rigour has its roots in science. It refers to the thoroughness and competency of the research process and the impact of this on the quality of the data collected, the

analysis and the reporting of findings. It has become a crucial tool through which qualitative research studies are analysed and then evaluated. It can be demonstrated by enabling the confirmation of the information discovered during the conduct of the study (Holloway & Wheeler, 2013). The criteria for judging rigour in qualitative research include: credibility, confirmability and transferability. These criteria are discussed in further details below.

3.6.8.1 Credibility

Credibility refers to the measures taken by the researcher in order to increase the chances of producing credible findings (Johnson, et al., 2007). In other words, it refers to the confidence in the qualitative data and in the steps adopted to interpret those data (Johnson, et al., 2007 ; Morse, et al., 2003). In order to work towards achieving such credibility, the researcher took steps to build rapport and trust among potential interview participants. The researcher used to be part of the nursing team at one of the Phase 2 hospitals before enrolling in her current study at the university. She felt that she was part of the team and did not find any difficulty in getting back to the team during preliminary visits to the location as well as during the data collection process. Although the researcher was thus well known to interview participants at one of the Phase 2 hospitals as a former colleague, this was not the case at the second hospital. So the researcher extended her involvement with the participants at the second hospital location to build trust by spending a considerable amount of time over several weeks, talking with and getting to know the ED nurses. She spent time in the ED, having conversations with the nurses during their tea break or lunch hour. The aim was for the nurses to know who the researcher was, to become familiar with what the research aims were, and to ensure that participants understood that their participation would be valued. In addition, this extended involvement of the researcher gave potential participants ample opportunity to approach her with any questions about participation, or to volunteer to participate.

Another significant technique commonly applied by researchers is to report the findings of the study back to the participants, for them to check if the findings relate to their experiences (member checking) (Campbell & Machado, 2013; Holloway & Wheeler, 2013; Tuckett, 2005). The researcher in this study has been asked by the ED managers to provide them with a report of the results once it is possible to do so.

The researcher is committed to reporting the findings as allowed by university regulations.

Credibility in this study was achieved through adopting the above-mentioned steps. In addition, these steps included logically establishing the research method and audio recording the semi-structured interview (Hays & Singh, 2012; Holloway & Wheeler, 2013). The researcher examined all relevant issues surrounding the nurses to enhance her understanding of the group and maximise credibility (Campbell & Machado, 2013; Holloway & Wheeler, 2013; Tuckett, 2005). Within the cultural norms, nurses used their own words to explain their opinions during the semi-structured interviews; these were then presented as quotations when the analysis was written up.

3.6.8.2 Confirmability

Confirmability is a process that enables other researchers to follow and audit the findings of the qualitative research study (DeWitt & Ploeg, 2006). That is, by being clear and objective when conducting the study, documenting its data, managing these data and reporting both the research process and the findings, then conclusions drawn based on these findings can be traced and confirmed all through these steps (Speziale, et al., 2011). Only the researcher, who collects the research data, can confirm the findings of the study as the details, documented or observed, are captured by the person who conducts the research study (DeWitt & Ploeg, 2006). Therefore, this concept refers to the confirmation of the research findings, conclusions and recommendations based on the collected data (Hoskins & Mariano, 2004).

To ensure confirmability in this study, the researcher audio recorded the semi-structured interviews, and followed clear steps of documentation so that all that participants said was recorded and then transcribed (Campbell & Machado, 2013; Holloway & Wheeler, 2013). These documents were revised and corrected by the researcher and approved by the panel supervisor, Dr. Sandra Mackey, to ensure they accurately reflected the audio recordings of what had been said during the interviews. However, the transcripts were not returned to the participants for review due to time constraints: both participants and their supervisors (HNs and DONs) indicated that ED nurses' workloads were too heavy for such a transcript review to be feasible for interview participants. In order to obtain descriptive validity the researcher analysed

the data independently and then consulted her principal supervisor, Dr. Sandra Mackey, for her expert opinion. After many discussions the researcher and her supervisor agreed on the themes and their corresponding sub-themes.

3.6.8.3 Transferability

Transferability refers to the likelihood that findings of a qualitative study can be applied to populations or situations that are similar to the original population (Speziale, et al., 2011). Unlike quantitative research measures, where the generalisability of results is a major issue that defines, in many cases, the contribution of the study to the area of investigation and can be determined by the author(s), deciding the transferability or ‘fittingness’ of findings from the qualitative research to other settings is the responsibility of those who will be using these findings, not the researcher (Graneheim & Lundman, 2004). This is because the researcher of the original study cannot be fully aware or understand all aspects surrounding the new areas where recommendations are to be transferred (Saini & Shlonsky, 2012). It is the responsibility of those who will transfer these recommendations to adapt and depict the transferability to their areas. The researcher in the original research takes all steps that are necessary to ensure the transferability and then the decision is up to the new users.

Qualitative researchers must be thoughtful in order to maximise the potential contribution of their work. Without a report of the rigour of their investigation, the transferability of findings in their study could be otherwise minimised or, in some cases, diminished (Branigan, 2003; DeWitt & Ploeg, 2006; Rolfe, 2006; Tobin & Begley, 2004; Tuckett, 2005). To achieve the maximum contribution, the researcher recruited participants purposefully for the semi-structured interviews so as to represent a variety of different circumstances, provide rich contextual data and promote better representation of individuals comprising the situation under investigation. The researcher in this study, through frequent visits to the clinical areas, talked to nurses representing different genders, experiences, academic preparations and cultural backgrounds so that a variety of representations could be achieved. The result was a mix of nurses, who represented a range of these characteristics.

3.7 Triangulation

Triangulation in research refers to “combining multiple theories, methods, observers and empirical material, to produce a more accurate, comprehensive and objective representation of the object of study” (Silverman, 2011, p. 369). Triangulation is a technique this researcher used to strengthen the rigour of the research by examining the subject under study from different perspectives. In qualitative research design, the most common application of triangulation is the use of multiple methods (e.g., survey and semi-structured interview) (Silverman, 2011). If the two employed methods result in similar findings, then it is assumed that the validity of those findings has been already established. This is because the two methods employed in triangulation used different sources of information and resulted in similar conclusions (Creswell & Plano Clark, 2011). Further, triangulation employs comprehensive, multi-perspective views and procedures to reduce potential biases within the research design (Silverman, 2011). The researcher in the current study triangulated the data with an additional strategy, by developing an informative interview guide for the Phase 2 semi-structured interviews (Appendix C), informed by preliminary analysis of a subset of participants’ responses and scores from Phase 1.

3.8 Integrated Data Analysis

One of the main purposes of integrated data analysis in a mixed methods study is the development of meta-inferences. Tashakkori and Teddlie (1998) describe a meta-inference as “an overall conclusion, explanation or understanding developed through and integration of the inferences obtained from the qualitative and quantitative strands of a mixed method study” (p. 101). In mixed methods studies, intentionally integrating data can be accomplished using one or more of three strategies for mixing the data sets: merging, connecting and embedding (Creswell, et al., 2011). The integration strategy used in this study was connecting by “combining for enhancement” (Bazeley & Kemp, 2012, p. 60). This strategy was a way of connecting the data that suited the two types of data to be combined. Combining for enhancement maximised the strengths of each and also minimised any weaknesses of

each (Bazeley & Kemp, 2012; Creswell, 2009; Creswell, et al., 2011; Midgley, Trimmer, & Davies, 2014). This process for integration was chosen because it made it possible to collect relevant data that would contribute to fuller insights into the perspectives and meanings of participants and to explain how these related to factors identified in the survey phase (Bazeley & Kemp, 2012; Midgley, et al., 2014). The integrated data analysis in the present study employed an integrative framework as recommended by Tashakkori and Teddlie (1998) as a way to ensure inference quality. This integrative framework involved the development of qualitative inferences, quantitative inferences and integrative inferences with the first two being developed in parallel strands and the meta-inferences from the integrative analysis occurring across the two qualitative and quantitative strands, through a process of abductive reasoning (Tashakkori & Teddlie, 2008).

Decisions about how to analyse the interview data were not made at the design stage, but arose from pragmatic needs. It was decided to proceed with the integrated data analysis using abductive reasoning as it became apparent that aspects of the interview data were recurring and stable: both Feilzer (2010) and Morgan (2007) have described this abductive process as emerging pragmatically when the data displays such qualities. The abductive process involved combining inferences obtained from both quantitative and qualitative phases of the research. Using abductive reasoning enabled the researcher to form the resulting meta-inferences synthetically, combining observations and inferences from the two data sets with facts from multiple sources, primarily the literature review. Abductive reasoning during integrative analysis was deemed to be particularly well suited to the sequential explanatory research design used in the present research project because “in abduction there is an implicit or explicit appeal to explanatory considerations” (Douven, 2011, para. 10). As Morgan (2007) has suggested, using such an abductive process during analysis allowed the researcher to “move back and forth between induction and deduction” (p. 71). Teddlie and Tashakkori (2009) also note the usefulness of abductive reasoning as part of making logical connections when the researcher perceives surprising “events” (p. 89) in the data.

Following the integrative framework, it was considered essential to begin combining the results at an early stage in the research. According to experts in the field, “for a

project to be classified as mixed methods rather than multimethod, as a minimum there must be interdependence of component approaches *during the analytic writing process* (i.e., as results *are being formulated* for presentation) and, usually, well before that stage” (Bazeley & Kemp, 2012, p. 69). Therefore, connection of the data began with preliminary analysis of 174 surveys that had been completed and returned to the researcher in advance of the interview phase. During the process of the analysis, correct and incorrect scores for the KASRP items were tabulated for the 174 returned surveys. The following example indicated how this preliminary analysis informed the subsequent interviews in Phase 2. The integrated analysis, which consisted of combining the data sets for enhancement of understanding, began with preliminary analysis of a subset of the survey data (n=174). It was determined in the course of this preliminary analysis that there was an inconsistency in the pattern of responses to the KASRP for the clinical vignettes as compared with item 43. The majority (142/173; 81.6%) correctly identified in item 43 that the best judge of the patient’s pain is the patient, yet for item 49, none of the participants responded correctly by choosing a pain score of 8/10 as the smiling patient in the vignette had reported. Similarly, in item 51, only three participants gave the correct answer of 8/10 as the grimacing patient had reported. Thus, the majority of participants had relied on differences in patient behaviour/demeanor in the two clinical vignettes, choosing a lower pain score for the smiling and laughing patient than for the patient who grimaced. These results alerted the researcher to prompt interview participants or to ask probing questions to encourage interview participants to relate experiences that would shed light on such choices by obtaining richer information about the phenomenon. As another example that arose during preliminary analysis, only 40 (23.0%) of this set of 174 participants whose surveys were subjected to preliminary analysis, were able to answer item 48 (regarding symptoms of opioid dependence) whereas 155 (89.1%) correctly identified the definition of addiction in item 34. This suggested that the topics of opioid dependence and addiction should also be further explored within the interviews to determine whether confusion about these terms was as widespread as preliminary analysis suggested might be the case.

To continue the analysis in this way, additional issues, discrepancies, concordances and resonances that were identified in the preliminary analysis thus informed the conduct of the interviews, whereby additional questions and prompts were added to

the semi-structured interview protocol to assist with qualitative data collection in the interview phase. The researcher identified areas and issues of interest, based on these patterns in the quantitative data, such as resonances as well as apparent areas of inconsistency in responses to the survey items.

Analysis from the early survey returns having thus formed a foundation upon which to base ongoing integration of the two data sets (Bazeley & Kemp, 2012), the collection of deep, rich, and pertinent data was obtained from the interviews. Integration of the data from the two phases continued through to the interpretation stage. Connection of the data sets was ongoing. While quantitative data analysis for the entire dataset of 629 surveys was continuing, qualitative data analysis had also begun. Analysis was conducted with the researcher always bearing in mind that each set of data needed to be analysed and ultimately understood in relation to one another, as part of the 'combining for enhancement' method. As well, data were analysed from the open-ended questions in items 55, 56 and 57 of the PAIN-MED survey, consisting primarily of words and phrases that survey participants had written into the spaces provided. Responses from this question were compiled into matrix tables based on the coded data. This process was used to help with the discovery of patterns in the data (Halcomb & Andrew, 2009). The narrative answers in this section were categorised and the researcher's supervisory panel members checked the coding. Verification of the coding by Dr. Sandra Mackey, the researcher's panel supervisor, was carried out to ensure rigour (Halcomb & Andrew, 2009).

As quantitative analysis of the survey data proceeded, it was informed in turn by the qualitative data. Part of the integrated analysis process consisted of being watchful for instances when aspects of interview data resonated with aspects of the quantitative results, and when these two data sets seemed not to be consistent. This awareness helped to stimulate new inferences in the data analysis in the search for explanations. In keeping with the mixed methods sequential explanatory design, quantitative findings were also corroborated by the qualitative findings during the integration phase and efforts were made to more fully understand the results, where the two sets of data were found to resonate and to conflict (Braun & Clarke, 2006). This integration involved the researcher noting, for example, the extent to which the

aspects of the data identified in preliminary analysis were consistent or inconsistent with previously identified issues as well as with and among the newly emergent themes. As well, during integrated data analysis, both connections between the data sets and contradictions in the data which had emerged from the quantitative and qualitative analyses were noted, considered and themselves subjected to analysis (Creswell, 2009; Creswell, et al., 2011). Explanations of the meta-inferences that resonate with particular issues of interest and how the researcher identified them during the preliminary, quantitative, qualitative and integrated analyses are provided in the discussion of the integrated findings in Chapter Six.

3.9 Ethical Considerations

An ethics application to conduct this research was submitted to the University of Western Sydney Human Research Ethics Committee (HREC) in Australia, prior to the commencement of data collection. Ethical approval is required for all research conducted in Australia (National Health and Medical Research Council of the Government of Australia, 2014). Permission was granted by the committee, enabling the study to be conducted (HREC approval number H9738, see Appendix D). A further research proposal was submitted for ethical review to the 12 participating hospitals' Human Research Ethics Committees. Approval from these hospitals was also received and is available upon request (see Appendix D).

Ethical considerations, including the nature and aims of the research, voluntary participation, the right to withdraw from participation, the protection of confidentiality and privacy of patients, the use and publication of the research results, the storage of data and benefits of research, were explained in writing to potential participants (Burns & Grove, 2009). This information was conveyed in the human ethics application form as well as the research information sheet; it was also verbally reinforced before the administration of the survey questionnaire. In Phase 1, a participant information sheet (Appendix E) was provided with each survey. This sheet described the study aims and ethical considerations, and stated that participation was entirely voluntary (Burns & Grove, 2009). By completing and returning the survey, participants gave implied consent to participate. In Phase 2, potential participants were given an information sheet (Appendix F). If they were

willing to participate, nurses were asked to complete a written consent form (Appendix G) and prior to the conduct of the interviews, the researcher asked each one to confirm having read, understood and signed the written consent.

All the information the participants provided was confidential and no identifying information was used. Data obtained from the participants were kept under lock in the researcher's personal password protected computer and her file binder while collecting data from Saudi Arabia. In Australia, research data were stored in a filing cabinet in the office of the researcher's supervisor at the Nursing school of the University of Western Sydney, Australia. The researcher and her supervisors were the only ones with access to the research data. Consistent with the ethical guidelines this data will be destroyed five years after the completion of this thesis.

3.9.1 Confidentiality and Anonymity

While confidentiality was ensured during both study phases, complete anonymity in was not possible in the Saudi Arabian EDs used in the study, as the ethical approval committees indicated that the HNs or DONs were to control the distribution and collection of the surveys in their EDs. However, a number of procedures were followed for both Phase 1 and Phase 2 to ensure an acceptable degree of confidentiality and to provide a degree of anonymity to the fullest extent possible given the cultural and organisational issues encountered.

Participants were provided an envelope in which they could seal a completed or blank survey form so that although their HNs or DONs would be aware of their handing in a survey envelope they would not be aware of the contents.

Interviews were conducted in private rooms or offices allocated by the participating hospitals, in a location away from the ED, in order to provide a private setting for the sake of confidentiality; complete anonymity was not possible for the interview participants as their identity was known to the researcher. The location was chosen so that both the researcher and the participant were able to enter the room at a convenient time and were able to do so without being observed by other ED staff. At the time of interview all participants were reminded that they had the right not to participate, or to end the interview at any time if they wished to do so.

To promote confidentiality of data, the researcher first assigned the interviewee an alphanumeric code known only to the researcher; this code letter was then attached to the recording and the transcript of the interview. Subsequently, for the purpose of presenting the Phase 2 findings from the interviews, a pseudonym was assigned to each participants' alphanumeric code. None of the participants' real names were recorded in the transcripts of the interviews, or during data analysis. Thus, for the purposes of any and all presentations of findings and results, including written reports, publications and conference presentations, all interview participants have been de-identified to ensure confidentiality.

3.9.2 Data Storage

Alphanumeric codes and pseudonyms were recorded in a master log and kept in a locked file in the researcher's private office accessible only to the researcher. Throughout the period during which the research has been conducted, the collected data have been secured in the personal computer and the personal USB external drive of the researcher in password-protected electronic form and the hard copies of the returned surveys and interview transcripts have been locked in the researcher's personal office, accessible only by her. On completion of the study, all completed surveys from Phase 1 and the audio recordings and printed transcripts from Phase 2 will be stored in a secure storage facility in the School of Nursing and Midwifery at the University of Western Sydney for a period of seven years.

3.9.3 Secure Disposal of Data

Stored data will be destroyed according to the mandates of the Human Research Ethics Committee in the University of Western Sydney, as follows: after seven years, paper copies of surveys and interview transcripts will be securely shredded, electronic data will be securely deleted and digital recordings will be securely deleted.

3.10 Conclusion

This chapter has provided a description of the research questions that drove the development and conduct of the study. It has explained the choice of mixed methods design and the underlying research paradigm of pragmatism as a highly appropriate approach for the complex research questions that drove the development and conduct of the study. In addition, a description of the two sequential phases of the study was provided, along with an outline of the methods used to collect data in the two phases. The quantitative, qualitative and integrated data analyses were explained. Strategies used to enhance the data quality were described, as were the ways in which validity, reliability and rigour were addressed. Finally, the ethical considerations taken into account in the conduct of the study were described.

Chapter Four: Phase 1 Results

This chapter presents the quantitative results from Phase 1 of the study, which comprised the survey, *Pain Management in the Emergency Department* (Pain-MED) conducted in the ED in Saudi Arabia during 2013. In keeping with the specific sequence in this study's sequential explanatory mixed methods design, the quantitative results from Phase 1, the cross-sectional survey, are reported in this chapter and the qualitative findings from Phase 2, the semi-structured interviews, are presented subsequently, in Chapter Five: Phase 2 Findings. The integrated findings that connect the two sets of data are presented last, in Chapter Six: Discussion.

4.1 Survey Response Rate

Based on the reported number of RNs employed in the participating EDs at the time ethical approval was obtained from the participating hospitals, a sample of 1440 RNs was identified. Of this sample, 629 ED nurses who met the inclusion criteria for participation in the study returned a survey during the study period (March to June 2013). This represents an overall response rate of 43.7%. There was considerable variability, however, in the response rates from different facilities at which the Pain-MED survey was distributed. Table 1 lists the number of surveys completed and returned from each of the twelve participating hospitals.

Table 1: Response Rate per Participating Hospital

Hospital Code	Surveys Distributed (n)	Surveys Returned (n)	Response Rate (%)
A	70	43	61.4
B	101	29	28.7
C	60	34	56.7
D	109	48	44.0
E	112	48	42.8
F	70	40	57.1
G	70	22	31.4
H	81	19	23.5
I	40	40	100.0
J	100	63	63.0
K	400	173	43.3
L	110	71	64.5
Total	1440	629	43.7

4.1.1 Missing Data

Some participants in the survey did not provide a response to all of the survey items. Of the 629 participants, 95 (15.1%) returned a fully complete survey. In addition to overall completion rates, rates of completion for individual sections differed, with more than quarter of participants (n=167; 26.6%) leaving one or more demographic items blank. This may or may not reflect concerns that some demographic items might identify individuals; participants were given assurances that anonymity would be carefully safeguarded throughout the conduct of the study and thereafter and knew that results would not be shared with their hospitals except as completely de-identified, aggregated data. Two-thirds of participants (n=418, 66.5%) did not provide an answer to one or more items in Section II, which tested participants' knowledge and attitudes. This suggests that some participants may have found certain items too difficult and preferred not to respond rather than giving a response that they thought might be incorrect. Notably, a substantial majority of participants (n=604; 96.0%) completed all responses in Section III, the BOPM items, suggesting that most participants who returned surveys were engaged with and interested in the topic of pain management in the ED.

4.2 Characteristics of Survey Participants

The demographic section of the survey gathered data about the gender, age and the professional characteristics of the participants.

4.2.1 Personal Demographics

The majority of participants were female (n=529; 84.1%). The age categories were divided into approximate quartiles to facilitate analysis. Nearly half of the participants were aged between 20 and 30 years (n=253; 41.1%) and over three-quarters of participants were aged 40 years or less (n=431; 76.6%). Table 2 presents a summary of the participants' personal demographic characteristics.

Table 2: Personal Demographics

Characteristic	n	%
Gender		
Female	529	84.1
Male	87	13.8
Missing	13	2.1
Age (Mean 34.3; SD 8.3)		
22 to 27 years	138	21.9
28 to 32 years	152	24.2
33 to 40 years	141	22.4
> 40 years	132	21.0
Missing	66	10.5

4.2.2 Professional Demographics

4.2.2.1 Employment Characteristics

Table 3 lists the employment characteristics of participants, of whom most were employed under the classification of registered nurse (n=597; 94.9%). A small number of participants (n=23; 3.6%) were employed in managerial or specialist positions.

Nursing experience ranged from 0.1 to 35 years (Mean 9.8 years; SD 7.1). Very few participants had less than a year of experience as a nurse (n=16; 2.5%). A little more than half of the participants had between 5 and 20 years' experience (n=328; 52.1%).

Participants' ED experience ranged from 0.2 year to 33.0 years (Mean 7.5 years; SD 5.7). More than a quarter of participants had five to ten years' ED experience (n=166; 26.4%) and 10.7% of participants (n=67) reported having worked in the ED for over 15 years. Three-quarters of participants had experience in two or more EDs (n=471; 74.8%), one third had worked in three or more EDs (n=210; 33.3%). Few participants had experience working in 4 or more EDs in their careers (n=88; 13.9%).

The work week in Saudi Arabia for nurses is long and part-time nursing employment is rare. Only a small number of participants worked fewer than 44 hours per week (n=31; 5.0%) and most worked 45 hours per week or more (n=510; 81.0%).

Table 3: Employment Characteristics

Characteristic	n	%
Employment designation		
Registered nurse	597	94.9
Head nurse	4	0.6
Nurse intern	5	0.8
Deputy head nurse	5	0.8
Clinical nurse specialist	6	1.0
Nurse manager	5	0.8
Other*	3	0.5
Missing	4	0.6
Years of nursing experience (Mean 9.8; SD 8.0)		
<1 year	16	2.5
1 – <5	120	19.1
5 – <10	160	25.4
10 – <15	94	14.9
15 – 20	74	11.7
> 20 years	49	7.8
Missing	116	18.4
Years of ED experience (Mean 7.5; SD 6.0)		
<1 year	18	2.9
1 – <5	181	28.8
5 – <10	166	26.4
10 – <15	81	12.9
15 – 20	44	7.0
> 20 years	23	3.7
Missing	116	18.4
EDs worked in during entire nursing career		
1	147	23.4
2	261	41.5
3	122	19.4
4	50	7.9
>4	38	6.0
Missing	11	1.7
Current hours worked per week (Mean 48.3; SD 8.0)		
<39	6	1.0
40 to 44	25	4.0
45 to 49	452	71.9
50 to 54	10	1.6
> 55	48	7.6
Missing	88	14.0

* Part I of the PAIN-MED survey instrument provided ‘other’ as an alternative employment category to provide a response possibility for those whose employment designation was not listed. This information has been grouped together in the above table as ‘other due to small numbers.

4.2.2.2 Educational Characteristics

In Saudi Arabia, it is possible to register as a nurse without a Bachelor's degree, thus nearly a third (n=205; 32.6%) held a diploma. The majority of participants held a Bachelor's degree as their highest educational qualification (n=404; 64.2%). A small number of participants held a Master's degree (n=13; 2.1%). Two participants indicated 'other' without specifying their alternative qualification. Table 4 provides an overview of the educational characteristics of participants.

With respect to nursing specialties, slightly more than half of the participants had a specialty relating directly to ED nursing (emergency, trauma and triage) (n=329; 52.2%). Slightly less than half of the participants (n=291; 46.3%) indicated that they had had some form of pain management education or training. More than a third of participants had attended a short course in pain management (less than 1 day) (n=225; 35.8%), a small percentage had attended a 1 – 5-day course (n=43; 6.8%), a few had a graduate certificate (n=10; 1.6%) and one had obtained a Master's degree in pain management. Some participants indicated 'Other' and specified having attended symposia as well as a variety of other educational options, either through In-Service or college and university.

Table 4: Educational Characteristics

Characteristic	n	%
Highest education qualification		
Diploma	205	32.6
Baccalaureate degree	404	64.2
Masters degree	13	2.1
Other*	2	0.3
Missing	5	0.8
Area of nursing specialty (participants may identify more than 1 nursing specialty)		
Emergency/triage	201	31.9
Trauma	128	20.3
Surgical	83	13.2
Medical	121	19.2
ICU	60	9.5
Cardiac	50	7.9
Paediatrics, NICU, PICU	62	9.9
Midwifery	44	7.0
General Nursing	37	5.9
Other**	17	2.7
Missing	171	27.2
Type of pain management education or training		
Short course (less than 1 day)	225	35.8
Short course 1 - 5 days	43	6.8
Graduate certificate	10	1.6
Masters	1	0.2
Other***	12	1.9
Nil	305	48.5
Missing	33	5.2

*Part I of the PAIN-MED survey instrument provided 'other' as an alternative educational qualification category to provide a response possibility for those whose education level was not listed.

**Unspecified information regarding 'nursing speciality' has been grouped together in the above table as 'other' due to small numbers.

***Unspecified information regarding 'pain management education or training' has been grouped together in the above table as 'other' due to small numbers.

4.3 Knowledge and Attitudes Survey Regarding Pain

Guidelines published by the developers of the KASRP, Ferrell & McCaffery (2012) were followed regarding analysis of data. Ferrell and McCaffery (2012) have advised that researchers not attempt to distinguish questions as measuring either knowledge alone or attitudes alone, as the survey is deliberately designed to include questions that measure both knowledge and attitudes. In accordance with these guidelines,

mean total KASRP scores were first calculated for each participant, followed by tabulation of the number of participants who provided correct responses for each individual KASRP item and there was further exploration of the lowest and highest scoring items overall.

4.3.1 Knowledge and Attitudes Survey Regarding Pain: Total Scores

The mean total score achieved by participants on the 40-item KASRP tool was 19.19 out of a possible 40 (SD 4.77, Range 2-40) or 48.0%. Only two participants (0.3%) answered all 40 KASRP questions correctly and thirteen participants (2.1%) achieved the recommended threshold level of 80% or more correct responses. Slightly more than half of participants (n=341, 54.2%) answered fewer than 20 questions correctly.

4.3.2 Factors Contributing to Total Scores in the Knowledge and Attitudes Survey Regarding Pain

Participants' personal and professional demographic characteristics were compared with total mean KASRP scores to determine whether any of these characteristics were correlated with the scores. Levene's tests for equality of variances and independent t-test were conducted, to determine any differences in mean total scores by nursing specialty (whether or not they had a specialty in emergency nursing or another specialty), age, gender, years as an RN, years in the nursing profession, years of ED experience, highest educational qualification, formal education in pain management and short-course training in pain management (Table 5). Each of these variables was dichotomised to facilitate comparison. Additionally, ANOVA and Kruskal-Wallis were conducted for equality of means among groups reporting varying levels of confidence in pain management, in relation to total KASRP scores.

Table 5: Mean KASRP Score & Participant Characteristics

Characteristic	n	Mean	SD	p
Nursing Specialty:				.250
Emergency	157	20.15	4.9	
Other (non-emergency)	221	19.49	3.8	
Gender:				.289
Male	76	20.21	4.6	
Female	420	19.60	4.4	
Age:				.213
More than 32	215	20.06	4.5	
Up to 32	234	19.55	4.4	
Years of Nursing Experience:				.027*
10 or more	223	20.22	4.8	
Up to 10	235	19.25	4.1	
Experience in ED:				.415
More than 6 years	188	19.54	4.5	
Up to 6 years	214	19.75	4.0	
Highest Educational Qualification:				.403
Diploma	163	19.58	5.1	
Bachelor/Master/Other	342	19.73	4.0	
Pain Management Education:				.099
Yes	208	20.13	4.6	
No	287	19.43	4.2	
Pain Management Training:				.034*
Short course (less than 1 day)	181	20.11	4.4	
Short course 2-5 days	35	18.51	4.3	

*Significant value

There were significant differences in total KASRP scores for only two participant characteristics. Those participants who had 10 or more years' nursing experience had higher scores than those with less than 10 years' experience ($p=0.027$). Additionally, those who had undergone a short course (less than 1 day) pain management training course scored higher than those who had attended a 1-5 day course in pain management ($p=0.034$).

4.3.3 Confidence in Pain Management

Analysis of the confidence item was consistent with previous use of such tools. Participants were asked to rate their level of confidence in managing pain in the ED on a 5-point Likert scale, with 5 indicating ‘always confident’ and 1 indicating ‘always unsure’. Due to the small number of responses in some categories, ratings of 1 (always unsure), 2 (sometimes nervous) or 3 (unsure) were therefore grouped together as “unsure” (n=45; 7.2%). The Kruskal-Wallis test was used to investigate the relationship between perceived confidence and KASRP scores and one-way ANOVA was conducted. Results showed a significant difference among groups reporting different confidence levels ($f=7.115$; $p=0.001$) (Table 6). Specifically, those lacking in confidence scored lower on the KASRP than those with more confidence.

Table 6: Perceived Confidence & Mean Total KASRP Score

Confidence Level	n	Mean Total KASRP	SD	p (*sig)
				.001*
Unsure	45	17.14	2.6	
Sometimes confident	233	19.85	4.1	
Always confident	197	19.82	4.7	

While this finding demonstrates that low confidence correlated with lower KASRP scores, it should be noted that mean total scores for all groups, no matter what their confidence level, was below 20/40 (<50%) and, interestingly, those who were ‘always confident’ had marginally lower mean total KASRP scores than the ‘sometimes confident’ group. In addition, only very few participants who were ‘always confident’ scored at or above the 80% threshold (n=6; 0.95%).

4.3.4 Analysis of Items in the Knowledge and Attitudes Survey Regarding Pain

A question-by-question analysis was performed to gain insight into the KASRP items for which participants provided the highest and lowest number of correct responses.

4.3.4.1 Lowest-Scoring Items

The number of participants supplying correct answers for the ten lowest-scoring items on the KASRP ranged from 46 (7.7%) for Item 50, to 203 (33.2%) for Item 22 (Table 7). Eight of these ten items referred to opioids, including side effects, administration, pharmacology & dosages, pre-diagnostic use, use in patients with a history of drug abuse and manifestations of physical dependence; one item concerned the ability of patients to sleep despite severe pain and one concerned the incidence of substance abuse. Two of these lowest-scoring items (16 and 31) related to pain assessment knowledge and attitudes and the remainder related to pain management knowledge and attitudes.

Table 7: Lowest-Scoring KASRP Items

Item No.	Item	Correct Responses (excluded missing data)	
		n	%
50	Case Study #1 (correct morphine dose)	46	7.7
40	Respiratory depression as opioid side effect	65	11.3
35	Opioid administration route (cancer pain)	74	12.4
16	Can patient sleep with severe pain?	104	16.7
52	Case Study #2 (correct morphine dose)	108	17.9
48	Physical dependence (opioids)	142	23.4
31	Use of opioids prior to diagnosis	144	23.6
38	Equivalent Oral and IV dosages (morphine)	172	29.7
45	Incidence of drug&/or alcohol abuse	191	32.6
22	Use of opioids when history of drug abuse	203	33.2

4.3.4.2 Highest-Scoring Items

Table 8 lists the highest-scoring KASRP items. Only four of the 40 items were answered correctly by at least 80% (n=503) of participants. As with the lowest scoring items, the majority of high scoring items were related to opioids and their use in pain management: in this list, six items referred to opioids. The item most participants were able to answer correctly asked for a definition of opioid addiction and was answered correctly by 88.6% (n=535) of participants. One the four remaining items (39) asked about optimal analgesia scheduling for pain management

during the immediate postop period. Pain assessment knowledge and attitudes were the topic of the three remaining highest-scoring items (43, 26 and 27), which referred, respectively, to patients' pain report, children's pain report and the role of patients' spiritual beliefs about suffering.

Table 8: Highest-Scoring KASRP Items

Item No.	Item	Correct Responses (excluded missing data)	
		n	%
34	Definition of opioid addiction	535	88.6
36	Opioid administration route (trauma/postop)	533	86.8
28	Adjustment of opioid dosage	526	86.1
43	Patient is most accurate judge of his/her pain	515	83.7
46	Time to peak effect (morphine IV)	487	79.7
39	Analgesia schedule (postop pain)	485	79.2
19	Combination of NSAID with morphine	452	73.5
24	Opioid tolerance in the elderly	432	71.1
26	Reliability of children's pain report	415	67.0
27	Patient's pain & spiritual beliefs	408	66.5

4.3.4.3 Comparison of Lowest- and Highest-Scoring Items

A comparison of the lowest- and highest-scoring KASRP items reveals some significant contradictions. For example, the second-highest-scoring item and the third-lowest-scoring item related to optimal administration route for opioid analgesia. For trauma or post-op pain, 86.8% of participants were able to identify the correct route. However, for cancer pain, only 12.4% of participants were able to correctly identify the optimal route for opioid administration. Interestingly, the top-scoring item related to opioid addiction and the fifth-lowest scoring item (at 23.4%) related to opioid dependence.

Additional contradictions revealed in the comparisons of responses to certain items suggest that participants' practice may be at odds with knowledge they possess, as is shown for example in the contrast between the large number of participants (n=515; 83.7%) who were able to correctly answer item 43 (which asked who is the most accurate judge of the intensity of the patient's pain) and the extremely small number of participants (n=46; 7.7%) who supplied a correct response to the case study item

50. The other case study items (49, 51 and 52), were also items that a substantial majority of participants were not able to answer correctly. In brief, the majority of participants correctly answered the theoretical question about patients' pain report, but in the case study questions the majority also supplied an answer that denied the patients' own report of pain. These contradictions were explored in the subsequent interviews.

4.4 Factors Affecting Optimal Pain Management

4.4.1 Current Status of Pain Management

Of the three sections on the Pain-MED survey, Section III, the BOPM items, had the smallest amount of missing data, suggesting that this portion of the survey was the one with which they were most willing to engage. Participants rated their perception of the importance of pain management on a 5-point Likert scale, with 1 indicating 'completely unimportant' and 5 indicating 'extremely important'. Of those who completed this section (N=604) more than 80% (n=491) reported that they perceived pain management to be 'extremely important'. Interestingly, four participants (0.7%) and six participants (1.0%), respectively, indicated that they perceived pain management to be 'not very important' and 'completely unimportant'.

Participants then rated how well they thought RNs generally managed pain in their ED(s) on a 5-point Likert scale from 1 - 'always poorly managed' to 5 - 'always well managed'. Approximately a quarter of participants (n=154; 25.5%) thought that pain in their ED was 'always well managed'. Eleven participants (1.8%) thought that pain was 'always poorly managed' in the ED.

4.4.2 Barriers to Optimal Pain Management

Item 55 in the PAIN-MED survey posed the question, "What factors hinder you in providing optimal pain management in the Emergency Department?" in order to identify participants' perceptions about barriers to optimal pain management in the ED. Participants were instructed to check as many reasons they felt applied to them.

Although results of Section II of the PAIN-MED survey, the KASRP items showed that most participants had a degree of knowledge deficit regarding pain, results of Section III were contradictory. Only a small minority (n=127, 20.2%) considered limitations in their own knowledge of pain management to be a barrier to optimal pain management in their EDs and even fewer (n=112, 17.8%) indicated that limitations in their pain assessment ability hindered optimal pain management for their patients, according to their responses to item 55. Whilst 283 participants (45.0%) reported that the top barrier was physicians' inadequate prescribing practices, three of the next highest four reported barriers related to participants' own reluctance to administer prescribed medication. These were due to concerns about addiction (n=236, 38.0%), side effects (n=218, 34.7%), and tolerance to medications (n=211, 33.5%). More than a third of participants (n=226, 35.9) indicated that patients did not give an accurate pain report and a slightly smaller number (n=197, 31.3%) attributed less-than-optimal pain management to patients' own reluctance to take the medications they were prescribed or offered.

Overall, participants tended to hold external factors responsible for the existence of barriers: these included the action and attitudes of medical staff (physicians) and patients, as well as heavy nursing workload. Few attributed sub-optimal pain management in their EDs to internal factors – that is, few acknowledged deficiencies in their knowledge, attitudes and/or clinical skills. Table 9 shows the barriers to optimal pain management items ranked in order of participants' most-cited to least-cited barriers. Since the participants were encouraged to report more than one barrier by checking all that they believed applied in their ED, the stated values add to an amount greater than 100% of participants due to this multiple reporting.

Table 9: Barriers to Optimal Pain Management

Barriers to Optimal Pain Management	n	%
Inadequate or insufficient physician medication orders	283	45.0
My concern about patients becoming addicted to pain medication	236	38.0
Patient's reluctance to report pain	226	35.9
My concern about side effects of medications (other than addiction)	218	34.7
My concern about patient becoming tolerant to analgesics	211	33.5
Patient's reluctance to take pain medications	197	31.3
Low priority given to pain management by medical staff	188	29.9
Competing demands on my time	167	26.6
Low priority given to pain management by nursing staff	139	22.1
Relatives' reluctance to have patient receive medications	138	21.9
Limitations in my knowledge of pain management	127	20.2
Limitations in my ability to assess pain	112	17.8
Low priority given to pain management by nursing management	80	12.7

4.4.3 Facilitators to Optimal Pain Management

Item 56 in the PAIN-MED survey posed the question, “What factors assist you to provide optimal pain management in the emergency department?” in order to identify participants’ perceptions about barriers to optimal pain management in the ED. Participants were instructed to check as many reasons they felt applied to them.

Consistent with the results shown in the Barriers question, item 55, responses to the Facilitators question (item 56) appeared to contradict the limitations in knowledge and attitudes scores as revealed in the Section II results. The top facilitator, with more than half of participants (n=363; 57.7%) choosing this item, cited their own knowledge of pain management as a facilitator of optimal pain management. Slightly more than half of participants (n=337; 53.6%) indicated their own pain assessment skills to be a facilitator to optimal pain management (Table 10). The way physicians prescribe in the ED was indicated as a facilitator by 360 participants (57.2%).

Table 10: Facilitators to Optimal Pain Management

Facilitators to Optimal Pain Management	n	%
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My knowledge of pain management	363	57.7
Adequate or sufficient medication orders from physicians	360	57.2
High priority given to pain management by medical staff	344	54.7
My skills in assessing pain	337	53.6
Access to education related to pain management	325	51.7
High priority given to pain management by nursing staff	315	50.1
High priority given to pain management by nursing management	296	47.1
I have sufficient time to assess and manage patients' pain	283	47.1

4.4.4 Write-in Responses to Open-ended Questions: Results

In items 55, 56 and 57 of the PAIN-MED survey (See Appendix A), participants were offered the opportunity to provide written responses about barriers, facilitators, and pressing issues they face in the ED. Item 55 offered an additional space to write barriers to optimal pain management not otherwise listed in the question regarding barriers. Similarly, item 56 offered an additional space to indicate facilitators to optimal pain management not otherwise listed. Finally, in item 57 survey participants were asked to write about any additional issues they felt were pressing concerns in the ED. To this end, the participants were asked to respond in the spaces provided at item 57 to the open-ended question, *“As a registered nurse working in the Emergency Department, what do you consider to be the most pressing issues facing nurses in the Emergency Department in terms of being able to provide patients with optimal pain management?”*

Responses to items 55, 56 and 57 were tabulated by placing the write-in responses into matrix tables to assist the researcher in discovering patterns in the data. Tabulation and analysis of write-in responses was aimed at (a) identifying the categories and subcategories of Phase 1 survey participants' perceptions of barriers and facilitators, along with their most pressing concerns they faced in the ED; (b) determining how these results related to the Phase 1 survey results, Phase 2 interview findings and the integrated findings. The results of the analysis are presented in this section, and a discussion of the results is provided in Chapter Six.

Among the Phase 1 survey participants, 240/629 (38.2%) provided one, two or three responses to these open-ended questions. None of the returned surveys contained more than three write-in responses. There were 442 individual write-in items, with a

number of these responses being similar or in some cases identical to other responses. Tabulated results regarding the number of responses and frequencies with thematic categories are shown in Table 11, below.

Table 11: Overall Results: Surveys with One or More Write-in Responses

Overall Results: Write-in Responses to Items 55, 56 & 57	n	%
Surveys with exactly one write-in response provided	101	41.9
Surveys with exactly two write-in responses provided	76	32.0
Surveys with exactly three write-in responses provided	63	26.1
Sub-total: surveys with one or more write-in responses	240	38.2
Surveys with no write-in responses	389	61.8
Total surveys returned	629	100

Analysis of the write-in responses to open-ended questions began with sorting of the responses into distinct sub-categories, with 53 such sub-categories identified. The following exemplifies the process the researcher followed in analysing these responses. The researcher grouped the following comments under the heading: ‘Culture and Communication’: ‘culture and language barrier’; ‘language barrier’; ‘communication barrier’; ‘most of the staff are non Saudi they are not fluent in Arabic language [sic]’ and ‘the Arabic communication sometimes the patient cannot express well his pain [sic]’. Some responses addressed or related to more than one identified category within the same response and in these cases they were included in all applicable categories. For example, the comment, ‘Plenty of SCA patients asking for narcotic analgesia even though not in pain’ was included in the sub-categories: ‘Patients suffering from SCD’; ‘Malingering (implied)’, and ‘Suspicion of addiction or drug-seeking (implied)’. Summaries of the trends in the categories and frequencies of the written responses were then developed. Next, the sub-categories were sorted into thematic categories, of which seven were identified. These seven thematic categories are listed, along with response frequencies, in Table 12, below.

Table 12: Thematic Categories For Write-in Responses

Thematic Categories for Write-in Responses*	n	%
Conditions in the Emergency Department	195	43.9
Perceived issues regarding patients	124	27.9
Healthcare providers' knowledge regarding pain	115	25.9
Adequacy of care	114	25.7
Culture and communication	38	8.6
Healthcare providers' attitudes regarding pain	30	6.8
Facilitators	4	0.9

*A number of participants' write-in responses pertained to more than one sub-category/thematic category, as noted above, so the total in this table adds to more than 100%

The subsequent sections, below, provide a brief discussion of each of these seven thematic categories with tables containing frequencies and percentages of the various types of write-in response in each category.

4.4.4.1 Conditions in the Emergency Department

Among Phase 1 participants who chose to provide write-in responses, a substantial number showed a marked concern with conditions in their EDs. Nearly half (n=195; 44.1%) of the total 442 write-in responses referred to some aspect of ED conditions. Participants' concerns related to overcrowding and limitations in bed capacity; inadequate staffing levels and staff-patient ratios; heavy workloads; and insufficient time available for the provision of adequate patient care. A substantial majority (156; 80%) of the 195 responses within this thematic category referred to one of these top four sub-categories, and comprised more than one-third (35.3%) of the 442 total write-in responses. Details of the response frequencies and percentages in this thematic category are shown in Table 13, below.

Table 13: Conditions in the Emergency Department

Conditions in the Emergency Department	n	%
Overcrowding, limited bed capacity	58	29.7
Inadequate staffing	42	21.5

Workload	29	14.9
Insufficient time for staff to care for patients adequately	27	13.8
Limited access to medication (narcotics)	10	5.1
Presence of patients' relatives is problematic	9	4.6
Inadequate equipment/resources	6	3.1
Patients have to wait too long	6	3.1
ED is stressful environment for patients (e.g. light, noise)	4	2.1
Multiple trauma/ Red Crescent	3	1.5
Inadequate supervision	1	0.5
Total number of responses related to ED conditions	195	100

4.4.4.2 Perceived Issues Regarding Patients

More than a quarter of the 442 write-in responses (124; 28.1%) referred to issues that participants perceived to arise from patient attributes, attitudes or behaviours. For example, 77 (62.1%) of the 124 responses in this category explicitly or implicitly referred to patients in the ED as addicted, drug-seeking and/or malingering. Seventeen of the responses in this category (13.7%) explicitly singled out patients suffering from SCD as addicts and/or malingerers. Another 47 (37.9%) of the responses in this thematic category referred to patients as demanding, unreasonable, uncooperative, noncompliant, and/or having unreasonably low pain tolerance. Frequencies of these sub-categories of perceived issues regarding patients are presented in Table 14, below.

Table 14: Perceived Issues Regarding Patients

Perceived Issues Regarding Patients	n	%
Patients are addicted (explicitly stated)	23	18.5
Patients suffering from sickle cell disease (SCD) who report pain are likely to be addicted and/or malingering	17	13.7
Patients are malingering (implied)	16	12.9
Patients are demanding and/or unreasonable in expectations of pain relief	15	12.1
Patients lack knowledge regarding pain/need to be better educated	11	8.9
Patients are uncooperative and/or noncompliant	10	8.1
Suspicion of addiction (implied)	9	7.3
Patients deny they are in pain	5	4.0
Patients are malingering (explicitly stated)	4	3.2
Patients who have knowledge about pain medication are addicted to narcotics	4	3.2
Patients who present frequently to hospital or ED do so because they are addicted to narcotics	4	3.2
Patients are unwilling to take analgesic medications	3	2.4
Patients have unreasonably low pain tolerance and should tolerate more pain	3	2.4
Total number of responses pertaining to patients	124	100

4.4.4.3 Healthcare Providers' Knowledge Regarding Pain

Write-in responses included in this category are shown in Table 15, below. The majority of responses were participants' explicit statements about colleagues' lack of knowledge regarding pain assessment, pain management and lack of necessary training. For example, of the 115 responses in this category, 105 (91.3%) pertained to a lack of knowledge and/or a need for training: for example, 46 (40%) stated that healthcare providers in the ED lacked adequate knowledge (in general), 39 (33.9%) referred to inadequate training in, or knowledge of, pain assessment; 12 (10.4%) referred to inadequate training in, or knowledge of, pain management. As well, among the responses included in this category during analysis were 10 responses from which it was possible to infer that participants providing the responses lacked essential knowledge themselves. Specifically, 7 (6.1%) of the participants' write-in responses indicated confusion regarding correct use of the terms dependence,

tolerance and addiction; this inference is supported by results of KASRP item 48 regarding symptoms of dependence, to which only 23.4% of participants were able to answer correctly. Three participants (2.6%) stated that patients with normal vital signs do not have ‘real pain’; the inference that this suggests a lack of evidence-based knowledge of pain assessment is supported by the results of KASRP item 13, to which only 38.4% of participants were able to provide a correct response.

Table 15: Healthcare Providers’ Knowledge of Pain

Healthcare Providers’ Knowledge of Pain	n	%
Healthcare providers lack adequate knowledge	46	40.0
Pain assessment is inadequate/ staff need training	39	33.9
Pain management is inadequate/staff need training	12	10.4
Confusion about difference in the terms tolerance, dependence and addiction	7	6.1
Misconception that pain is not present if vital signs are not elevated	3	2.6
Nurses need more training and education	3	2.6
Evidence-based guidelines are needed	3	2.6
Inadequate knowledge of cancer pain	1	0.9
Knowledge of use of WHO ladder*	1	0.9
Total number of responses pertaining to knowledge of pain	115	100

* A protocol developed by the World Health Organization for the treatment of cancer pain, widely known as the ‘WHO ladder’

4.4.4.4 Adequacy of Care

A substantial range of issues related to inadequate care in the ED were raised in the write-in response section of the PAIN-MED survey: More than a quarter (115; 26.0%) of the 442 write-in responses referred to inadequacies in patient care in the ED. Prominent among these were inadequacies in pain assessment and inadequate prescribing by physicians. Details of participants’ responses regarding adequacy of care in the ED are provided in Table 16, below.

Table 16: Adequacy of Care

Adequacy of Care	n	%
Inadequate pain assessment	39	35.1
Physicians: inadequate/late prescribing of needed medication	36	32.4
Inadequate pain management	12	10.8
Patients have to wait too long for care/treatment	6	5.4
Nurse reluctance to administer medication to patient (concern about side effects)	3	2.7
Negligence/errors	3	2.7
Staff fear to prescribe/administer opioids	2	1.8
Inadequate triage	2	1.8
Inadequate patient history	2	1.8
Physician refusal to prescribe medication to patient in pain due to suspected addiction	1	0.9
Nurse refusal to administer medication to patient in pain due to suspected addiction	1	0.9
Lack of staff confidence in pain management	1	0.9
Medical staff give low priority to pain management	1	0.9
Non-pharmaceutical pain management strategies/alternatives to pharmaceutical pain management not used	1	0.9
Inequitable treatment of patients	1	0.9
Total number of responses pertaining to adequacy of care	111	100

4.4.4.5 Culture and Communication

Frequencies of the write-in responses related to culture and communication are shown in Table 17, below. Only 38 (8.6%) of the 442 write-in responses were related to culture and communication as pressing issues that nurses face in the ED in Saudi Arabia. The existence of a language barrier was the most frequently-cited response in this thematic category, with 23 (60.5%) of the 38 responses relating to a lack of Arabic language on the part of staff, or the lack of a common language among patients, physicians and nurses. Only three responses referred to the spiritual beliefs of patients as a barrier, despite the result noted above in Section 4.3.4.2 with two-thirds of KASRP participants correctly answering item 27 by stating that patients may think pain and suffering are necessary due to their spiritual beliefs. One response indicated a perception that the PAIN-MED survey did not apply in Saudi Arabia; however, as this one comments represents only 0.23% of the total number of responses, it may be assumed that, overall, Phase 1 participants found the survey

culturally applicable and linguistically comprehensible. Similarly, the single response related to delays in male nurses obtaining permission to give care to female patients suggests that such instances may be rare in the ED in Saudi Arabia.

Table 17: Culture and Communication

Culture and Communication	n	%
Language barrier	23	60.5
Culture	10	26.3
Spiritual beliefs of patients	3	7.9
Male nurse encounters issues/delay when seeing female patient	1	2.6
Survey not applicable to Saudi	1	2.6
Total number of responses pertaining to Language & Culture	38	100

4.4.4.6 Healthcare Providers' Attitudes Regarding Pain

Overall, write-in responses suggested that survey participants were more concerned about their colleagues' lack of knowledge regarding pain, as noted in Section 4.4.4.3, above, than with their colleagues' attitudes towards patients. Of the 64 responses in this thematic category, only 9 (14.1%) specifically cited either colleagues' lack of empathy or negative attitudes toward patients. The predominant issue participants reported that they faced, with respect to attitudes, was the perception that both nurses and physicians refused or delayed care for to patients; this was noted in most (54; 84.4%) of the responses in this category. Only one response indicated a perception that staff lacked confidence in pain management; this result is supported by the results noted in Section 4.3.3 above. Details of the frequencies within the various sub-categories related to attitudes are shown in Table 18, below.

Table 18: Healthcare Providers' Attitudes Regarding Pain

Healthcare Providers' Attitudes Regarding Pain	n	%
Physician refusal to prescribe or delay in prescribing/treating	34	53.1
Delay or refusal to give nursing care/administer analgesics	20	31.3
Staff lack empathy for patients and/or do not acknowledge/accept patients' pain report	5	7.8
Colleagues have negative attitudes toward patients	4	6.3
Staff lack confidence	1	1.6
Total number of responses pertaining to attitudes regarding pain	64	100

4.4.4.7 Facilitators

Only a very few of the write-in comments provided by participants could be considered facilitators. Responses indicating that survey participants perceived that their EDs provided satisfactory pain management were included within this thematic category. While three of the seven responses in this category refer to effective pain management in the ED, it must be noted that this represents only 0.6% of the total write-in responses. Issues of concern and barriers to optimal pain management vastly predominated among the write-in responses that participants chose to provide. Similarly, since there was just one response in each of the other four sub-categories within this thematic category it may be inferred that, overall, survey participants had a great deal more to suggest about how pain management could be improved in their EDs than they were prepared to indicate as representing effective pain management. Details of the thematic category, facilitators to optimal pain management, are provided in Table 19, below.

Table 19: Facilitators to Optimal Pain Management

Facilitators to Optimal Pain Management	n	%
No pressing issues - pain management is effective	3	60.5
Pain is the 5 th vital sign	1	26.3
Availability of resources	1	7.9
Efficiency, time sufficient [to] plan medical treatment	1	2.6
Medical staff give high priority to pain management	1	2.6
Total number of responses pertaining to Language & Culture	7	100

4.4.4.8 Summary

Without a doubt, participants' write-in responses reflected the fact that many of them find their working conditions problematic, with heavy workload, time pressures, high staff-patient ratios, and high patient census having the potential to contribute to stress, fatigue and burnout. Another prominent feature of the write-in responses is the large number of comments indicating participants' perception that patients themselves are implicated in sub-optimal pain management, with a number of participants indicating a perception of patients as unreasonable, uncooperative, malingering and prone to addiction and substance abuse. Additional pressing issues the participants expressed suggest that both knowledge and attitudes may be inadequate and that patient care may suffer as a result. Less of a concern, although still an issue, are culture and communication as potential barriers to optimal pain management in the ED. Finally, it must be noted that the very small number of responses that referred to facilitators stands in contrast to the large number of issues that participants identified as pressing concerns regarding the provision of optimal pain management in the ED. A discussion of these results, detailing how they relate to the results from Phase 1 and Phase 2 as well as the integrated findings, is included in Chapter Six.

4.5 Conclusion

This chapter has presented the research results from Phase 1 of the research study. It has explored the knowledge and attitudes, barriers and facilitators, in relation to pain management of ED nurses in Saudi Arabia. The mean total KASRP score was low. Only a minority of participants (2.1%) met the 80% benchmark threshold for the KASRP. Despite the low mean total KASRP score, overall levels of confidence in pain management ability were very high and participants indicated their own knowledge as the key facilitator of optimal pain management in the ED. The quantitative data provided several findings that appear somewhat contradictory. The subsequent qualitative interviews were used to explore these issues to gain deeper insight around the key results and provide an explanation for these data. Interview findings and thematic analysis of the qualitative data are presented in the following chapter, Chapter Five.

Chapter Five: Phase 2 Findings

This chapter presents the findings from Phase 2 of the research project. This phase addressed the research questions: What are the knowledge and attitudes regarding pain of RNs in the ED in Saudi Arabia? and What are the barriers and facilitators that these RNs perceive affect their pain management practice? These questions guided the conduct of the semi-structured interviews and the thematic analysis of the text of participants' narratives, in which they related their experiences of nursing patients with pain in the ED in Saudi Arabia. Three major themes and nine sub-themes were distilled from the data and these are presented in this chapter.

5.1 Characteristics of Interview Participants

Fourteen RNs from two hospitals participated in the Phase 2 interviews. Seven participants were recruited from each hospital after which data saturation was reached. Mean time of interviews was 39 minutes. Participants' ages ranged from 26 to 53; mean age was 36.0 years (SD 7.38). Thirteen participants were female RNs and one was male. The average length of employment in their current positions in the ED was three years. They held various positions: three were staff nurses, six were senior nurses with more than 5 years' experience, three were clinical instructors (with experience in this role for at least two years), one was a trauma nurse and one a head nurse. The highest educational qualification for all but two participants was a Baccalaureate (Bachelor's) degree in nursing. Two had a nursing diploma: as noted in the introductory chapter, nurses with a diploma only can currently obtain certification as an RN in Saudi Arabia by sitting an examination set by the SCHS.

5.2 Major Themes and Theme Structure

Three major themes and nine sub-themes emerged through the process of thematic analysis. These are listed in Table 20 below. The text following this summary table illustrates each theme in detail with exemplars from the transcribed interviews.

Table 20: Qualitative Data Analysis: Theme structure

Theme One: Pain Management Practice Influenced by Nurses' Knowledge
Sub-Theme: Interpreting Assessment Findings
Sub-Theme: Deciding How and When to Treat Patient's Pain
Sub-Theme: Treatment with Opioids as a Cause for Concern
Theme Two: Pain Management Practice Influenced by Nurses' Attitudes
Sub-Theme: Patients' Expressions of Suffering
Sub-Theme: Perceptions of Patients' Pain Tolerance
Sub-Theme: Patient-Nurse Interactions
Theme Three: Influence of External Factors on Nurses' Pain Management Practice
Sub-Theme: Continuing Education in Pain Management
Sub-Theme: ED Workload
Sub-Theme: Emergency Department Environment

5.3 Theme One: Pain Management Practice Influenced by Nurses' Knowledge

In response to interview questions about their experiences of pain management, participants described the clinical practice steps of pain assessment and pain treatment. Accordingly, the three sub-themes, 'Interpreting Assessment Findings', 'Deciding How and When to Treat Patients' Pain' and 'Treatment with Opioids as a Cause for Concern' reflect the participants' descriptions of the way ED nurses' knowledge influenced the clinical decisions they made while carrying out these steps.

5.3.1 Interpreting Assessment Findings

Accurate assessment is an important step in achieving effective pain management. Consistent with best practice guidelines, participants reported using several tools to assess pain at initial assessment and in subsequent re-assessments. Participants' knowledge of pain assessment was reflected both in the way they used pain scales and how they responded to the results. Knowledge of different types of tools and their application in practice was evident:

Mainly here in our area we are using the Wong-Baker FACES and CPOT for the intubated patients, and numerical rating scale for other patients – cooperative and conscious we are asking the patient [about] onset of pain, duration, quality and frequency of the pain. (Mariam).

For verbal patients who were able to self-report, the most frequently-used pain scale was the numerical rating scale, typically a zero-to-ten scale. One participant also mentioned the usefulness of the Wong-Baker when there are language barriers. These are more in evidence at EDs in Saudi Arabia during Hajj than at other times of the year. The enormous numbers of international pilgrims who travel to the Holy City of Makkah are entitled to free healthcare as part of MOH's provision of medical services and therefore the EDs in Makkah become very crowded at this time.

Most of the participants acknowledged the accepted definition of pain as a subjective experience that is unique to each individual and recognised that patients express pain in different ways:

Yeah depends, that's according to them, their attitude towards the pain, how they express their way for the pain. Some can control the pain and smile to others, some are shouting, some are quiet, it depends upon the patient or the person. They express different ways - how they're to express. Some can still laugh or smile, it's personal. (Lizzy)

While acknowledging the concept of the centrality of patient self-report in assessing and managing pain many participants found it difficult, however, to apply this knowledge when assessing patient's pain in their own practice:

If really in pain because what is going on inside the body, the patient who is only who knows, and telling, like this, like this, I cannot – this is very hard for us nursing, to differentiate, you know? Is it really patient in pain, or just pretending, you know? (Beni)

Participants considered the patient's self-report in conjunction with other factors they considered relevant, such as the patient's body language, tone of voice and facial expression. Participants related that they thought patients with genuine pain would be unable to smile; only one noted that patients could smile even in the presence of severe pain. Similarly, the presence or absence of a facial grimace was a factor that almost all the participants explicitly referred to as a definitive determinant of the reliability or unreliability of the level of pain the patient had described:

If there is no pain zero is relaxed facial. If there is some grimaces or not severe grimaces, or down facial expression it's mild pain. But there is severe grimaces or the patient is crying so it will be severe pain. [...] Sometimes patients also are lying [or] malingering. So sometimes it affects the pain assessment. (Pyal)

In addition to facial expression, participants interpreted the patient's pain self-report of pain differently if the patient was still able to laugh:

If she's laughing – I mean, she's pain-free. There is no pain. If she's laughing we can assess by putting pain for a zero. If she's screaming score her pain score from seven to 10, something like that. (Jay)

Although best practice suggests otherwise, participants described comparing physiological signs, vital signs and the results of laboratory results with patients' self-reports of their pain levels:

When a person tells you that he is really in pain, it's with clinical manifestations, like they will also - should have the pulse rate increased, sometimes they are manifesting cold, clammy skin, this is really the big thing. You can see it, and if you're an expert in assessing, you can then – you can correctly assess, well, that this is a true pain and this is just a false pain. (Leian)

If a patient reported moderate to severe pain, participants often sought to confirm this by checking whether vital signs were elevated:

[Pain] can be seen directly without telling, the vital sign will show it, especially the blood pressure it will be the systolic will show high, sometime like this, this depends on the severity of the pain. (Beni)

Similarly, some participants referred to tachycardia and elevated heart rate as confirmation that a patient was experiencing high levels of pain:

You can also assess the vital signs, because if you have really pain, the pulse rate will increase. (Eva)

Other strategies for interpreting patients' self-reports included assessing patients' actions or body language:

Sometimes actually we are thinking he or she is malingering because if you are in pain you will not be laughing. You will rather be quiet. (Pyal)

Based on these comparisons of patient self-report of pain with other factors, participants reported frequent encounters in the ED with patients they judged to be untruthful, manipulative, or both. In some cases, participants described such patients as "hysterical", or as having psychological or psychiatric issues:

Sometimes psychologically unstable patients also manipulate you. 'Sister, I don't want this IM, I want it IV'. Since they're already aware that IV will affect faster than IM, so they want to be relieved immediately, but this medication is ideally - should be given IV [...]. Really, there are some patients who are hysterical, especially in the ER. (Leian)

Overall, participants perceived it was necessary to confirm patients' patient self-report using a variety of additional criteria, before proceeding to pain treatment. In some cases they judged their own assessments, based on other criteria such as behaviour, body language and facial expressions, to be more accurate reflections of the patients' pain levels. These processes then influenced subsequent decisions about pain treatment.

5.3.2 Deciding How and When to Treat Patients' Pain

Participants demonstrated some knowledge of pain-related symptoms associated with particular disease conditions and this knowledge influenced their decision-making in pain management. Renal colic and chest pain were given as examples of presentations that would receive prompt pain treatment in the ED. Patients presenting with chest pain received priority for immediate action:

Usually in ER we're most exposed to MI patients, so immediately once the patient will come, we are not ignoring it at all. Immediately once the patient complains or verbalises chest pain, whether they are known to it or what, we are immediately trying to assess the patient. Then after that, immediately action will be done for that patient and the management for the pain.
(Emma)

Thus, standing orders for probable Myocardial Infarction (MI) allowed nurses to act without delay.

For chest pain patient, we can give them the oral medication, for example aspirin, then to morphine, these are the management for the MI patient. Cardiac patients, if they have this standing order that we can do immediately once the patient will be coming to ER. (Marvic)

Similarly, abdominal pain that was suspected to be or was diagnosed as renal colic, was also considered an immediate priority for pain treatment, as Lizzy noted: “*If patient came to you with acute renal colic and in severe pain, try to manage first the pain.*” Additional categories of patient who were also considered unquestionably to have pain requiring treatment, regardless of the patient's inability to report pain included terminal cases and those with injuries and burns:

Dying patient with malignancy, intubated patient, sedated patient [...]. Trauma patient, this burn patient, of course even the patient will not tell you that he is really in pain, you should have to give painkiller. (Marvic)

Participants indicated that the disease or condition of the patient influenced their attitudes towards the patient and their pain. They were inclined to believe, for

example, that cancer sufferers, those who had recently had surgery and patients presenting with chest pain were likely telling the truth about high levels of pain:

Usually they almost are eight to ten score, sometimes they're coming with that score. We have cancer patients we are also having with – the score is more. Sometimes surgical patients and medical also, we have all this cases coming here but the pain is higher pain scale. (Lizzy)

Patient reports of cancer pain were believed to be truthful and this influenced their attitudes toward the pain report, as indicated by the way they described their response and the promptness with which they would treat the patient's pain:

For example a patient who is a cancer patient, sometimes they are relying that the patient is having this [pain]. So from the medical report, or from the medication they are taking, from there they can just take a decision what medication is supposed to be given to this patient. Those who are having this malignancy, so they are all in pain, so we need to treat them. (Marvic)

To summarise, in contrast to the clarity with which participants approached patients with certain diagnoses, as described above, participants considered the pain management process in certain other presentations to be less clear-cut. Presentations featuring chronic pain or recurrent episodes of acute pain and who had high frequency of ED attendance were evaluated with scepticism, in particular when opioids would normally be the treatment of choice. Participants considered such cases in a substantially different light.

5.3.3 Treatment with Opioids as a Cause for Concern

Participants expressed a strong resistance to administering narcotic analgesia for pain in many instances. The rationale was the conviction that there was a likelihood of narcotic addiction when opioids were used to treat severe or chronic pain. Participants thus described the intentional undertreatment of pain for frequent ED users as a part of what was deemed appropriate pain management for patients with chronic pain conditions. Such patients were deemed to be likely to be over-reporting their pain because of substance abuse issues. Pain treatment using opioids was

reportedly withheld in such cases due to a perception that greater harm could come to the patient through administration of opioids than because of undertreated pain:

But usually, as our teaching or education to the patient, especially for our regular client coming to ER for pain management, we are just asking them or telling them, if it's a tolerable pain, to wait for some time maybe it's just only something that can be relieved by hydration, fluids. (Marvic)

When opioid administration was required, participants indicated their preference for beginning with a lower-than-optimal dosage, making reference to the WHO ladder as a rationale for pain treatment in the ED despite its having been created a number of years ago for cancer pain treatment specifically and as such having limited applicability to other types of pain:

Some doctors just to [relieve] the pain, they will give directly the boost of the medication, they're not following the ladder that you should start from at least a lower dose. (Leian)

In most cases, other classes of analgesics than opioids were favoured, despite knowledge of their lesser efficacy in treating moderate to severe pain and their much longer time to effect:

For example, if you have given a paracetamol, it will take an hour before the assessment of the patient was really working. So we will document there that the patient was relieved or stayed in pain. (Leian)

Some participants stated that they would prefer not to administer opioids but would offer NSAIDs together with reassurance:

Most of the time we just will give non-steroidal (anti-inflammatory medications). Even with a non-steroidal pain medication I think they can be relieved, once you've reassured them and given the medication, they are ok. (Marin)

While a small subset of participants indicated that patients suffering from SCD were likely to have severe pain that required prompt pain relief with morphine along with other necessary treatments, SCD was associated with false pain reports more than

any other disease or condition and was the exemplar to which participants most frequently referred when discussing their reservations about administering opioids. The frequency with which patients suffering from SCD presented to the ED with pain resulted in many participants concluding that these patients were drug-seeking:

Because sometimes here, as I had observed, especially from some patients are usually taking this medication, we cannot just tell, because every now and then they are coming here every four hours or every six hours just to take this medication, some sickle cell patient. (Marvic)

Patients with SCD were referred to by the pejorative term ‘sickler’:

For example, there's a sickler coming – they used to come just to give them some morphine, so even though it's like addicted, it's like a routine for them to get the morphine, even not really they are in pain. (Josif)

Most participants classified SCD as a special case of likely false pain report. Lizzy commented, “Mostly the sickler patients are doing, other patients don't do like that.” Participants expressed a view that many patients with SCD present to ED only to feed their addiction:

How many of our known sickler that only coming there it's because of morphine; believe they are not in pain. They are already, let's say the word, addicted, to morphine. (Marisa)

Although all the participants noted their concerns about addiction, they were unclear about the symptoms of ‘dependence’ versus those of ‘addiction’:

I mean they are addicted to that kind of medicine, so it's very hard to manage, very hard to give that medication to relieve their pain. It's still - they are addicted already. (Josif)

Likewise, they also tended to confuse the terms ‘tolerance’ and ‘addiction’ particularly in the case of chronic pain that was being treated with opioids:

Especially those patients who are, have been the chronic pain, always, always, always. I think giving sometimes they are having some sort of

addictive to this medication, their tolerance to this medication is becoming high. (Marin)

This lack of clarity extended to participants' attribution of psychological versus physiological factors in their assessment of patients in whom they suspected substance abuse:

The patients actually are addicted to the management of pain. Usually sometimes after giving 5mg or 10mg morphine, actually they are relieved but psychologically they are saying that they have still pain. (Pyl)

When patients expressed knowledge of their disease and experience with the efficacy of certain analgesics for their type and level of pain, participants' tended to attribute this to drug-seeking:

For example, the doctor will order Tramadol and they want the morphine. So they know this Tramadol cannot relieve their pain, only this morphine. Maybe this is psychological. (Josif)

In addition, patients who frequently attended the ED with reports of high pain levels were subject to being 'reported' as possible substance abusers:

I told my doctor, you can - you are not helping the patient if you will just [tolerate] them, you are ruining more their lives and their health. So what we did, we wrote a letter reporting – regarding this patient, we called the attention of the heads of our hospital. (Leian)

In the case of patients with knowledge, for example, who would identify a preferred vein for a cannula insertion, participants reported that they would sometimes consider the matter to be a criminal rather than a medical one:

They will tell you, this is the good vein, because this vein was tried already and it's collapsed. 'So doctor, can you come with me, if my opinion is right or wrong, I think this person is ...' With that one, we will leave more for further investigation, or we will even call secretly call the attention of the police to retrieve their records. (Leian)

When participants reported patients whom they suspected of substance abuse, they did so with knowledge of the seriousness with which all matters related to narcotics are treated in Saudi Arabia and thus they also often acted out of concern for themselves:

Nurses are dependent also, because if they're facing this kind of problem, they will take the opinion of their doctor. So the last will be the doctor's decision, so if the doctor will agree that, okay, give it IV, then the nurse will follow the instruction as long as it's accepted. [...] Because at the end, I will be in trouble, not them. (Leian)

In summary, participants expressed greatly exaggerated concerns that patients exhibited symptoms of addiction, were at serious risk for addiction, and were likely in many cases to be drug-seeking. Specific mention of patients suffering from SCD focused on the widely-held belief that these patients are likely to provide false pain reports and to be addicted to narcotics. A lack of clarity regarding the terms addiction, dependence and tolerance were frequently noted, as well as confusion about when and whether opioids should be used.

Overall, Theme 1 related to the tendency of RNs in the ED in Saudi Arabia to interpret the pain assessments rather than respecting the pain report provided by the patient. These interpretations were then used as the basis for making clinical decisions with respect to the way patients' pain would be treated, and even in many cases, whether patients who reported pain would be treated at all. A number of these interpretations and subsequent clinical decisions were also based on erroneous beliefs about opioids, the dangers of addiction and the likelihood of addiction amongst patients presenting to the ED and reporting moderate to severe pain.

5.4 Theme Two: Pain Management Practice Influenced by Nurses' Attitudes

This second theme relates to the way participants articulated their attitudes towards pain management, which subsequently affected the provision of care. During the interviews, participants reflected on various factors that they perceived as influencing

pain management. Sub-themes were related to four main factors: ‘patients’ expressions of suffering’; ‘specific diseases and conditions’; ‘patients’ perceived pain tolerance’; and ‘patient- nurse interactions influenced pain treatment’.

5.4.1 Perception of Patients’ Expressions of Suffering

Participants revealed a range of responses to their patients’ expressions of pain and suffering. While some expressed compassion about their patients’ expressions of suffering, other indicated frustration and impatience.

The importance of nurses’ attitudes towards patients was noted in this participants’ description of the relationship between attitude and pain management:

Honestly, we should understand that the patient is in pain [...], we should let them feel comfortable, because it is by feeling them comfortable it is more lessen the pain, and where the more irritate them the more pain they feel. So it is somewhat like this the attitude, but I think the more important factor is, number one, is the attitude of the nurses. (Marin)

Another participant suggested that positive feelings on the part of nurses could have a beneficial effect on the patient who suffers pain:

Yes, because nurses should have this passionate care to the patient. If you have this passionate care to the patient then sometimes they can - you can give good or positive feeling to the patient. Sometimes pain can be relieved even – only by verbal communication. (Pyal)

Some participants expressed a sense of empathy for patients’ suffering and a described the emotional pain nurses can feel when they lose patients they have cared for. Marvic explained her feelings this way:

You don't know [what] this patient is suffering [...]. Really, if you will put yourself into their place, Alhamdulillah [Arabic expression meaning ‘Thanks to God’] we are not in that situation, but as a nurse sometimes you will cry, how many patients we lost.

Yet not all patients' expressions of suffering elicited an empathetic response; for example, both *Pyal* and *Marvic*, quoted immediately above, also indicated a lack of empathy towards some patients who reported pain: *Marvic* stated, "*we just don't know if they are really malingering, [or] they are really in crisis*" and similarly, *Pyal* commented, "*some patients are malingering also. So sometimes it affects the pain assessment*". The reference to "malingering" suggests that empathy was correlated with the degree to which patients' reports of their pain level matched their nurses' own assessments of the patients' pain levels. In the course of the interviews, all the participants described scenarios illustrating their perception that substantial numbers of patients attending the ED were not suffering pain at the level they claimed. Participants expressed less empathy towards patients they perceived to be over-reporting the pain and tended to under-assess and undertreat the pain of such patients.

Both pain assessment and pain treatment were also affected by other ways in which participants responded to their patients' manner of expressing their suffering. Prioritising of patient's pain could be negatively impacted by participants' assumptions about a patient's demeanour being associated with a particular pain level. Nursing decisions about patient priority based on inaccurate pain assessments affect not only pain treatment, but also medical diagnosis. For example, a quiet patient who was given a lower priority for treatment based on inaccurate pain assessment at triage was misdiagnosed at first:

So, she is quiet anyway, so she is just priority four. So this [is] masking that she is really having abdominal pain. She will wait. Although even if inside she is feeling severe pain, we don't know that this is already appendicitis, because we are also talking about the, individuality of the person, suffering from the pain. (Marisa)

Inaccurate assessments are thus often associated with poor patient outcomes, as another participant described:

Patient will come through, oh he's malingering. Patient will come to you like this, but then the patient suddenly collapsed, but then the patient

suddenly coded. That's the only time you will realise the patient's really in pain. (Marvic)

Participants noted that a lower triage category might be assigned than that which the patient's self-report would have indicated, based on patients expressing their pain in a ways that was considered by some ED nurses as unacceptable or irritating. For example, patients whom participants deemed to be too loud, aggressive or rude were also likely to be prioritised at a lower level for pain treatment:

But sometimes you are only human, that, 'later I will give the analgesia because you are shouting with me.' Something like that, you will let them wait. (Marisa)

Although two participants expressed some compassion for ED patients with severe pain, overall the main characteristics of participants' comments regarding the suffering of their patients were a lack of compassion and a sense of frustration that patients expected pain relief and did not want to tolerate high levels of pain.

5.4.2 Perceptions of Patients' Pain Tolerance

Participants' perceptions of patients' pain tolerance influenced their practice. For example, the way a patient manifested pain could be differently interpreted as a high or low pain threshold, with some manifestations thus denoting 'real' pain in a patient deemed to have high pain tolerance or 'false' pain in a patient deemed to have low pain tolerance.

Participants generally described stoicism or high pain tolerance in a positive light:

There are also persons, persons that the threshold of pain is very high, that, you [know] there is already severe pain, they are quiet. And she is very known already for the pain. (Marisa)

Patients whom participants considered to have low pain tolerance were viewed as exercising poor choices in the way they expressed their pain and ought to be more considerate of other patients:

It varies according to their pain threshold again, right? Then if the one who is crying, if the one who is shouting, all you have to do is comfort the patient: [the patient] should minimise because there are also other patient[s]. (Eva)

Participants sometimes considered patients to be exaggerating their pain based on misplaced anxiety about what their pain represented:

But for the other, only a small cut, and they will cry as if really very serious matter. (Marisa)

In addition, a low tolerance for pain was also considered to be based not on individual differences, but rather, on their diagnosis:

Like you know in sicklers, their threshold of pain is very low. (Marisa)

Gender was another characteristic to which participants attributed differences in patients' pain tolerance, although there was no consensus regarding male or female pain thresholds:

Usually, males are more afraid of injections than females, and males are low when it comes to threshold of pain. (Marisa)

Participants' attitudes towards their patients were also affected by their beliefs about national or ethnic characteristics regarding expression of pain and pain tolerance:

Yes, like for Bangladesh types of patients, their threshold is so small. Male and female. Like it's only abdominal pain from the food they eat, they are screaming and crying, like they will die after an hour like this. But for some other nationalities - okay, let's compare the Saudis. Some Saudis, especially the men, no, they can stay firm - they are not screaming. The only thing [is that] usually patients that are screaming in pain who are male Saudis are those with renal colic, it's really painful, I know. Then for some Filipinos who are coming here also complaining of pain, they are not that hysterical in dealing with pain. They are also quiet and will just tell me the history. (Leian)

In general, participants tended to attribute what they perceived to be a high or low pain tolerance to the patient's character; in other cases they attributed a patient's pain tolerance to their nationality or ethnic origin. Similar to the findings with respect to participants' perceptions of the suffering of their patients, interview participants expressed little compassion for patients with severe pain, and most participants expressed frustration with patients who did not suffer quietly and stoically.

5.4.3 Patient-Nurse Interactions

Overall, participants tended to attribute patients' attitudes as negative in cases when they did not like the patient's behaviour, tone of voice, or the loudness of their complaints. For example, one participant stated:

I mean the attitudes of patients towards the nurses. [That affects] pain management. Yes, if she is, you know, dealing with the nurses with negative attitude, like shouting to the nurses. (Marisa)

Participants suggested that when nurses exhibited negative attitudes toward patients, this originated in their frustration or annoyance with patients whom they found to be irritating:

Sometimes there are, I don't know how to say it, there are patients who are making, sometimes, noises irritating to the nurses. Like coming then in pain and exacerbating like this, making, making loud noise, making like this, crying loudly so sometimes it is irritating to the nurses. (Marin)

Participants suggested that nurses' negative attitudes originated in their frustration or annoyance with patients whom they found to be irritating:

Sometimes there are, I don't know how to say it, there are patients who are making, sometimes, noises irritating to the nurses. Like coming then in pain and exacerbating like this, making, making loud noise, making like this, crying loudly so sometimes it is irritating to the nurses. (Marin)

This same participant also noted that the negative attitudes nurses displayed in their responses to patient behaviours were not appropriately professional:

But we are not supposed to act like that, no? This is improper, but what we need is of course to help the patient feel comfortable and let them know that we will give what they need and manage like this, but there are some instances that it affects us, really, for example also the attitude of the patient like this, but we as nurses in our profession, we should not. (Marin)

Two of the participants commented that the nurses' personal circumstances or mood sometimes influenced their attitude to patients in pain and response to their behaviour:

Yeah because the first start of the duty, you will be irritated. So one patient will come only, 'Omi Okthei ana fe alam' [Arabic: 'sister, I have pain here']. Then you will start to get, 'ya Aboya khali shwaya' [Arabic: 'bro, wait for a while'], like that. But if you're happy or if you're okay like that, even though patient is irritable you can still have long patience. (Janin)

Participants noted that patients do pick up on nurses' mood and attitudes, which also influenced their behaviour toward the nurse. As Lizzy described it:

Sometimes their attitude, when they approach to interact with the patient they show that attitude. When we can have a nice way to talk maybe it's their attitude, they will reply like that, so the patients will not approach that particular nurse.

Participants referred to patients as "cooperative" when they were able to respond to assessment questions from ED nurses. Some interview participants suggested that there was a 'proper way' for patients to interact with nurses:

If the patient is cooperative, they're following our orders and if you ask him he will [reply] in the proper way. We can manage them. But some patients they are irritable, they're angry. They will not give us the proper answer and they don't want to cooperate with us. Like those cases, it's difficult. (Mariam)

Participants described patients as "uncooperative" when they could not articulate the precise nature of their complaint. Participants did not distinguish between nurses

being unable to respond and being unwilling to respond, but acknowledged that the degree of patients' cooperation affected pain management:

[It is] very difficult to manage pain if the patient is uncooperative and if the patient will not tell exactly where is the pain location. Sometimes it's very difficult because we don't know where is the pain. (Eva)

Among those who were considered uncooperative, those patients who were irritable were not distinguished from those with mental health issues:

Psychiatric patient or irritable patients, even though they are not cooperating, we have difficulty for reassessing the patient and management of [pain].

Sometimes patients' demeanour or the way they reported their pain resulted in nurses gaining an impression that the patient was attention-seeking. More than one-third of participants described this impression specifically:

Sometimes if you are crying that doesn't mean you are in severe pain also. Sometimes you are exaggerating the pain. Because they are seeking attention. (Janin)

Participants noted that when ED nurses viewed a patient as over-reporting their pain, when such a patient complained to their doctor of unsatisfactory pain treatment, it was common for both nurses and doctors to consider the complaint as invalid:

Some people are coming, they will tell you we are not minding them, we are not giving the proper care, we are not [...] doing any pain management. Some of them are coming and telling their doctors. They don't mind, they ignore them because they are just acting. So if they are in real pain then like that some of them will tell. (Lizzy)

The tendency to reflect primarily on the way patients interacted with nursing staff (rather than the reverse) was strong. When asked specifically whether they could think of any nurse characteristics that might influence pain management, participants referred to patients' ways of complaining. For example, in response to a question about nurse characteristics, Lizzy responded:

Yeah of course, when the patient sometimes they complain, 'this nurse is not good'.

Participants noted that they sometimes felt threatened by patients:

If this patient is abusive and giving you some reactions that are threatening you [...] then you will really be affected. (Leian)

One participant, however, recognised that severe pain was often the cause of patients expressing their suffering in a way that could be interpreted as negative attitude toward nurses:

How many sickler patients, this attitude sometimes because [...] they have pain – really great pain. (Marisa)

Overall, participants were inclined to hold patients behaviour responsible for nurses' negative attitudes and irritability, rather than – as was suggested by very few participants – factors within the nurses themselves such as moodiness, stress, fatigue, overwork, or a lack of compassion.

Theme 2 related to participants' perceptions that patients' behaviours, such as the way they complained of their pain and expressed their suffering, were a significant source of irritation. In general, the findings within this theme pointed to a number of negative attitudes toward patients. The participants conveyed the sense that they perceived patients who complained of their pain and suffering to be a burden on the nursing staff. There was a tendency to blame patients in pain for being irritating to the nursing staff and little recognition among participants of the extent to which nurses' negative attitudes were responsible to a substantial degree for negative nurse-patient interactions.

5.5 Theme Three: Influence of External Factors on Nurses' Pain Management Practice

Whereas the first two major themes related to knowledge and attitudes, which are factors internal to the participants, this theme related to the external factors

participants perceived to influence their pain management practice. Participants responded to interview questions and prompts with narratives about factors they perceived to facilitate optimal pain management, or to act as barriers. Sub-themes that emerged within this theme were: ‘Continuing Education in Pain Management’; ‘ED Workload’; and ‘ED Environment’; all of which participants cited as influencing their management of pain for their ED patients.

5.5.1 Continuing Education in Pain Management

Some of the interview participants shared their thoughts on continuing education in pain management, such as specific training, short courses and their perceptions about the general state of preparedness of ED nurses to manage patients’ pain in the ED. Availability of continuing pain education courses varied, according to participants’ reports, but they generally expressed their willingness to attend if any were offered:

There was no offer for pain management. They haven’t, there is no studies, further studies, lecture, for pain management. But if there is, I am glad to attend. (Beni)

Participants noted that they felt they could benefit from short courses to update their knowledge and skills themselves:

...then we can implement that new or updated skill. How to manage the patient in future for the pain so that we [will be] knowledgeable nurse[s]. (Beni)

Another participant suggested that other emergency procedures were the subject of ongoing education, but pain management was not among the topics of short courses, although both staff and patients would benefit if such education were available:

We have also many lectures and practice training regarding any other emergency procedures, but [...] we never had any lectures for the pain management. Yeah, we need to improve. The thing is that if when education people will give us more lectures or any training regarding the pain management it would be better so that patients would be satisfied and we

will usually feel good when they go from here. They're managed well and they will not be having any complaints or any other bad effects. (Lizzy)

One participant commented on receiving training in the use of assessment tools and acknowledged their importance for improving patient care:

Yes. They are asking us to attend to make this continuous education regarding this pain management. [...] we are free to ask question if we don't know something regarding some tools like that. Maybe yes, they are encouraging us that much because we need this one. The pain assessment is very important for our patients. In our profession pain is one of the things that we need to eliminate for the patient. (Jay)

In summary, it was acknowledged by most participants that pain education and training would be useful, but that there was not a great deal of such education of this type available in their EDs.

5.5.2 Emergency Department Workload

Overcrowding, with insufficient staff to cope with the workload was a problem that affected pain management in the ED:

But if the workload is too much - I am alone and I am doing the work for five instead of one [...]. So of course, it will really affect. (Jay)

There were often many acute patients in the ED at once, but some participants expressed the view that nurses are able to prioritise patients and handle the workload:

They are given high importance. If they are two patients in the same time and they are crying, there is more than three, four nurses every time in ER. We are attending one nurse with one patient and another nurse with the other patient. We are not neglecting the patients. (Mariam)

Nevertheless, the heavy workload could take its toll and ultimately could affect the attitude of nursing staff, as Lizzy noted:

Yeah the workload, sometimes their attitude, when they approach to interact with the patient they show that attitude. When we can have a nice way to talk maybe it's their attitude, they will reply like that, so the patients will not approach that particular nurse.

Marvic described teamwork as factor that could influence the effects of the workload even when it was on the increase:

Yes, workload really. Not like before. You see even how busy we are before, but the team, it depends upon the team. The teamwork. Now, younger ones, I don't know if they are really slow motion, comparing to the older people, or those who are been here for quite long time. Or they don't want to be involved like that, because some also, 'this is my salary, so I will work only for the money that I'm receiving.' (Marvic)

Administrative matters and paperwork were in some cases considered excessive:

Yes, it's written already in the pain assessment tool, and they said we have to do it also in the nurses' notes. So I think it's too redundant, I mean, the paper workload of the nurses, it will help them a lot if it were lessened. But since it's appeared once in all the charts, I think that's enough. So that's my opinion. (Leian)

The consensus among participants was that ED workload was heavy, that it was a factor that was detrimental to patient care and nursing morale. Moreover, some participants perceived that the issue of too-heavy ED workload seemed to be on the increase.

5.5.3 Emergency Department Environment

The environment in the emergency departments was something participants noted as having a potentially detrimental effect on patients pain and nursing care, particularly with respect to overcrowding and noise. However, despite the nature of the emergency setting, which is sometimes problematic, participants noted that ED nurses nevertheless still supported their patients in pain:

The environment. And if it's relaxing or it's noisy like that, because the patient is – if she's in pain, she will get more irritated if the environment is noisy, shouting. Something like that. But support – we're supporting the patient. (Jay)

The continuous bright lighting in the ED was noted as a factor that could possibly have a negative effect on patients in pain. As Marvic explained:

Even you will give them a painkiller – if the surrounding is not conducive for them, they still feel that they are in pain. [...] In our emergency room there is no place for [light-sensitive patients because] we can close [the light] in only one area.

Patients in pain can be very sensitive to ambient temperature, so participants noted that a lack of localised control for air conditioning or heating was a factor that affected patients' comfort and well-being:

If you are in pain, you want to be in a warm area like that. Even in ER, our air con is even centralised. In female [area] – yeah, it's also centralised. There are just particular places here that we can control. But because sometimes if there are [individuals] and you are facing different types of patients, if this one is in pain and this one needs air to breathe or cool air to calm down because her BP is high, so it should matter even the temperature.

Most participants cited overcrowding as a characteristic of the emergency setting and noted that both patients and staff were negatively affected:

If there is over-crowdedness, of course the comfort of the patient will matter. Sometimes if really there are too many patients, you can even let them share in a bed or in a cubicle, two of them there, who are screaming from pain and that one is also noisy from pain. Of course it will really affect – and hearing all these things, the burden working as a staff, yeah, it's really affecting. (Leian)

Participants noted not just heavy demands on nursing staff but also on supplies. Emma described this and noted the detrimental effects on pain management for patients:

Of course some lack of medication also, out of stock of this medicine, so the patient has to suffer sometimes for that, the patient has to wait for a long time for them to relieve the pain so it will aggravate more pain for them and you could not manage it immediately; some negligence will be there for the pain management because what best we can give is not enough. I think that the workload should be lessened. (Emma)

Within Theme 3, there seemed to be a general consensus that because of high patient census is typical in Saudi Arabian EDs, the workload for RNs is extremely heavy, overcrowding is often a problem, and that and that a lack of both staffing and other resources can adversely affect not only patient care but is also a significant burden on nurses.

5.6 Summary

This chapter has presented the research findings on the analysis of data collected from the Phase 2 interviews. Exemplars from interview transcripts illustrated the various ways participants' practice was influenced by their knowledge of pain assessment and pain treatments; and how their attitudes toward patients were shaped by the patients' expressions of their pain and the way they interacted with nursing staff. In addition, the effects of external factors on ED pain management were also illustrated with excerpts from the narratives of interview participants.

The following chapter will describe and discuss the integrated findings from the Phase 1 results and Phase 2 findings.

Chapter Six: Discussion

This final chapter presents a discussion of the overall integrated findings of the research project, in which the results from both Phase 1 and findings from Phase 2 were combined in order to enhance understanding of RNs' pain management in the ED in Saudi Arabia. The first section discusses the five key findings that were distilled from the integrated analysis of the combined data. The second section presents the implications of these findings and recommendations for nursing education, practice and policy, as well as recommendations for further research. The strengths and limitations of the research project are discussed in the third and fourth sections, respectively. The fifth and final section of this chapter presents the conclusions.

6.1 Discussion of Key Findings

This integrated analysis of Phase 1 results and Phase 2 findings revealed five key findings. The first key finding was that one of the participants' top priorities in pain assessment was to 'read' the way patients' self-report pain to define the report in terms of its perceived truthfulness. The second finding was that pain management was more likely to be based on best practice for patients whom participants perceived as truthful in their pain reports, compared with patients perceived as less truthful. The third finding was that ED nursing unit cultures supported participants in making clinical decisions based on intuition and accepted practice, even when such decisions were contrary to best practice. The fourth finding was that participants were potentially at risk for both frustration and compassion fatigue, due to the challenges of caring for patients with high pain levels in an environment characterised by uncertainty and complexity. The fifth finding was that participants tended to over-identify patients with pain as possible substance abusers and to under-administer opioids, due to a lack of clarity regarding best practice in the use of opioid analgesia.

Table 21, below, presents the relationship of the key findings with the three research questions and the alignment of the findings with Phase 1 and Phase 2 of the research project.

Table 21: Key Findings in Relation to Research Questions and Study Phases

Key Finding	Applicable to			Align with	
	Research Q. #1	Research Q. #2	Research Q. #3	Phase 1	Phase 2
1. Participants tended to ‘read’ patients’ self-report of pain to try to determine whether truthful	X	X	X	X	X
2. Pain management was likely to be based on best practice mainly for those patients whom participants perceived as truthful in their pain reports	X	X	X		X
3. ED nursing unit cultures supported participants in making clinical decisions based on intuition and accepted practice			X	X	X
4. Participants possibly at risk for frustration, burnout and compassion fatigue			X		X
5. Participants tended to over-identify patients with pain as possible substance abusers and therefore to under-administer opioids.	X	X	X	X	X

Collectively, these five key findings, which are discussed in detail in the following sections, illuminate significant aspects of pain management nursing in the ED in Saudi Arabia.

6.1.1 Key Finding 1: ‘Reading’ the Way Patients Self-Report

This first finding relates to participants in both the Phase 1 survey and the Phase 2 interviews. An indication that survey participants might be engaging in ‘reading’ patients to determine their perceive truthfulness during pain assessment was initially

noted during preliminary analysis. At this stage, it was noted that responses for the case studies, items 49-52 of the KASRP, were inconsistent with responses to item 43. Specifically, in the preliminary data set consisting of the first 174 surveys received, 142 (80.7%) of survey participants reported that patients' reports are the most reliable indicator of their pain. In contrast, however, none (0.0%) answered the first case study question (item 49) correctly, 18 (10.3%) provided a correct response to item 50, 3 (1.7%) answered item 51 correctly, and 37 (21.3%) gave the correct answer to item 52. As discussed in the literature review in Chapter Two, the case study items, widely known as the "Andrew-Robert questions" (Pasero & McCaffery, 2011, p. 21), were designed by the original authors to determine whether patients' behaviour would influence nurses' decision making in pain assessment and pain management. On the other hand, item 43 measured participants' knowledge regarding nursing's 'gold standard' for pain assessment, whereby nurses must respect and accept the patient's pain report as the most reliable means of determining their pain level. This result informed the interviews, and the researcher subsequently sought further insight into this preliminary result by prompting interview participants to relate more about this and other aspects of their pain assessment practice. As they described the process, this 'reading' of the patient was the way to determine whether their patients were being truthful about their reported pain level. Following the interviews, inconsistency between responses to item 43 and items 49-54 was confirmed in the quantitative analysis of the entire Phase 1 data set.

In integrating the two data sets, consideration was given to findings in the literature that supported or was inconsistent with the findings of the present research project. Numerous other investigators have noted nurses' tendency to disregard the patients' pain report on the basis of behavioural cues: for these case studies, it is commonly reported that more participants in KASRP-based studies were able to provide a correct response to item 43 than to the case studies (Al Qadire & Al Khalaileh, 2012; Alqahtani & Jones, 2015; Bernardi, et al., 2007; Briggs, 2010; Eid, et al., 2014; Kaki, 2006; Kaki, et al., 2009; Mocerri & Drevdahl, 2014; Morse, et al., 2003; Tsai, et al., 2007; Wang & Tsai, 2010). It has been reported in the literature that participants in numerous KASRP-based studies tend to identify that the patient is the best judge of his/her own pain (see item 43 in the present study), yet in the case studies these same participants (a) underestimate the pain intensity for both patients; (b)

consistently choose a lower rating for the smiling patient than for the grimacing patient; and (c) choose an amount of morphine that would represent a significant undertreatment of even the nurses' own lower pain estimate, not only for the smiling patient but also for the grimacing one (Al Qadire & Al Khalaileh, 2012; Alqahtani & Jones, 2015; Bernardi, et al., 2007; Briggs, 2010; Eid, et al., 2014; Kaki, 2006; Kaki, et al., 2009; Mocerri & Drevdahl, 2014; Tsai, et al., 2007; Wang & Tsai, 2010). McCaffery et al. (2000) have previously suggested that "Nurses do not always follow the simple guideline of recording the patient's pain rating" (p. 80). Suggested reasons for this as noted in the literature include nurses' negative attitudes and knowledge deficits (Ferrell & McCaffery, 2012; McCaffery & Robinson, 2002; Pasero & McCaffery, 2011).

In the present research project, by combining the survey data for these KASRP items with, data from the interviews findings, it was possible to develop additional insight into some of the processes whereby nurses may rationale their use of such strategies as 'reading' the patient by judging behaviour and body language, resulting in underestimating and undertreating patients' pain. Findings provided the insight that Phase 1 participants were convinced that determining whether or not their patients were truthfully reporting their pain was part of their professional responsibility. Moreover, they indicated that they felt it was a priority for them to do so before proceeding with clinical decisions about pain management. They would discount a patient's self-report in circumstances which convinced them the patient was not reporting truthfully. Phase 1 interview participants' narratives about pain assessments in the ED indicated that they were convinced that numerous patients who presented to the ED exaggerated their pain, or falsified their pain reports. The interviewees reportedly perceived significant numbers of ED patients to be addicts, drug-seekers, and/or attention-seekers – 'malingerers', in their own words, and any patients thus identified should not be treated for the level of pain they reported, but the level of pain the nurses perceived them to have.

This finding is important because the principle of trust is of paramount importance in the nurse-patient relationship, since it underpins essential aspects of ethical nursing practice (American Society for Pain Management Nursing, 2006; Drew, et al., 2014). Yet reports of pervasive doubts about the truthfulness of their patients' pain reports

were more the rule than the exception among Phase 2 interview participants. This finding was consistent across both phases, with Phase 1 respondents' practice, as indicated by their responses to the case study contradicting their reported knowledge that the most accurate judge of pain intensity is the patient, as noted in Chapter Four: Phase 1 Results. Phase 2 interview findings provided some insight into these results. Probing questions during Phase 2 revealed that interview participants seemed not to have fully internalised their knowledge that the definitive statement regarding that person's pain level is the patient's self-report. Thus, while interview participants were able to articulate this knowledge, they reported, without apparent awareness that there was any discrepancy between their knowledge and their practice, that they tended not to act on this knowledge. Instead, they reportedly preferred to 'read' the patient in order to make a decision about the veracity of the pain report. This 'reading', according to interview findings, tended to result in a belief that patients often over-reported their pain. This was particularly the case when there was no confirmation of other factors such as elevated vital signs or other clinical results which participants perceived would have corroborated a patient's pain report. Overall, these instances led participants to form a negative impression of the patient when such factors were not present. Participants reported employing a variety of strategies to determine whether they would believe the patient, employing not only instinct and judgement, but various clinical strategies – such as checking vital signs or using a behavioural pain scale – that are only considered best practice when a patient is unconscious, intubated, or otherwise unable to report (Wells, et al., 2008).

Phase 2 interview data supported results from the PAIN-MED survey; both survey respondents and interview participants were in many cases not able to identify what constitutes best practice in pain assessment. For example, the majority of survey respondents answered incorrectly to items regarding pain and sleep, vital signs and distractibility, as well as to the case studies that measured belief in the self-report of patients. Interview participants reported that they believed they could determine from patient behaviour, body language, facial expressions, vital signs and/or clinical tests, whether or not patients were over-reporting their pain. These findings indicate a research-practice gap among ED nurses in Saudi Arabia, as these factors are known not to be reliable indicators of pain level or intensity (Burns & Grove, 2011; Dihle, et al., 2006; Ferrell & McCaffery, 2012; International Association for the Study of

Pain, 2011b; McCaffery & Robinson, 2002; Pasero & McCaffery, 2011). In addition, interview participants cited their intuition as a reliable way to determine patients' veracity, reporting, for example, that they "*knew*" if patients were in "*real pain*" or not. When they perceived a patient to be exaggerating or lying, interview participants suggested a range of reasons for doing so, such as: addiction to narcotics or drug-seeking; attention-seeking; psychological issues; or belief that by exaggerating the pain they will get more rapid treatment. Similar nursing beliefs have been reported elsewhere in the literature (Bergman, 2012; Bergman & Diamond, 2013; Burns & Grove, 2011; Dihle, et al., 2006; Ferrell & McCaffery, 2012; International Association for the Study of Pain, 2011b; McCaffery & Robinson, 2002; Morgan, 2012; Pasero & McCaffery, 2011). It was consistent across both study phases that most participants believed patients would not be able to smile, laugh, or be distracted in the presence of 'real' pain. This too suggests a research-practice gap among participants as it is widely reported in peer-reviewed research studies that all these behaviours may be present even with extremely severe pain (de C Williams, 2002b; Hirsh, et al., 2011; McCaffery & Robinson, 2002; Pasero, 2009; Pasero & McCaffery, 2011) (Bergman, 2012; Bergman & Diamond, 2013; Morgan, 2012; Pasero & McCaffery, 2011).

Another way in which participants interpreted patients' pain was by monitoring clinical signs. A majority of survey and interview participants believed that patients would necessarily have elevated vital signs, physiological manifestations or positive clinical test results, particularly if their pain were moderate to severe. Thus, one of the ways participants reported determining whether the patient was truthful was through noting the pain self-report and if vital signs or physiological factors were normal and laboratory tests were negative, the patient was deemed to have over-reported the intensity and/or severity of their pain. As noted in interviews and in the written responses from survey participants to the open-ended question in item 57, participants in both phases indicated a belief that the nurse rather than the patient, is the authority on the patients' pain level. This was exemplified by the following comment written by a survey participant in response to item 57: "Patient doesn't show in much pain as claimed by him/herself when using the pain scale vs vital signs and body language from patient". Other knowledge and attitudes studies have reported similar findings (Bergman, 2012; Bergman & Diamond, 2013; Morgan,

2012; Young & Davidhizar, 2008; Young, et al., 2006) and nursing textbooks indicate that it is important to educate nurses on this point (McCaffery & Pasero, 1999; Pasero & McCaffery, 2011; Wells, et al., 2008). (Ersek & Poe, 2004; Fonteyn & Ritter, 2000; Lewis, Heitkemper, & Dirksen, 2004; McCaffery & Pasero, 1999; Pasero & McCaffery, 2011; Wells, et al., 2008; Wilkinson, Treas, & Barnett, 2016). While the results of empirical studies have demonstrated that although pain may affect vital signs, pain also can – and frequently does – occur without any changes in vital signs and without other abnormal clinical signs or physiological indicators (Chen & Chen, 2014; Kapoustina, et al., 2014), vital signs do not necessarily demonstrate out-of-normal-range values due to pain; that is, they are not empirically associated with pain (Dunwoody, et al., 2008; McCaffery & Robinson, 2002; Pasero, 2009; Pasero & McCaffery, 2011; Pasero, et al., 2009; Wells, et al., 2008). The presence of abnormal values does not confirm pain, nor does their absence indicate an absence of pain (Arbour, et al., 2014) and therefore these should not be used to confirm or refute what patients say about their pain. Thus, while participants reported using objective criteria in their pain assessments for greater accuracy, in fact as indicated in the literature review above, at the time of writing no objective tests existed that would allow the measurement of pain (Bogdanov, et al., 2015; Davis, 2011; International Association for the Study of Pain, 2011a, 2011b; International Association for the Study of Pain, 2015; Lynn, et al., 2014; Martucci, et al., 2014; Pasero & McCaffery, 2011; Wager, et al., 2013; Wiech, et al., 2014). As Pasero and McCaffery (2011) note, “Who is the authority on patients’ pain? Whose pain is it? Clinicians sometimes believe they know more about patients’ pain than the patient does. *No matter how appealing that belief may be, it is false*” [emphasis added] (p. 20).

Few survey respondents were able to provide a correct response to the PAIN-MED item regarding patients’ ability to sleep with pain. Interview participants confirmed this, indicating that they would consider a patient’s ability to sleep to be an objective means of determining that the patient’s previous pain report was false, or that their pain had been adequately relieved if analgesia had been administered. It has also been consistently acknowledged in the nursing literature over the past half-century that while pain may disrupt sleep, it does not prevent it; and, moreover, patients may use sleep as a coping strategy for pain. (Ferrell & McCaffery, 2012; McCaffery &

Pasero, 1999; McCaffery & Robinson, 2002; Pasero & McCaffery, 2011). Recent research studies, both prospective (Davies, Macfarlane, Nicholl, Dickens, Morris, Ray, & McBeth, 2008; Lyngberg, Rasmussen, Jørgensen, & Jensen, 2005; Mork & Nilsen, 2012; Nitter, Pripp, & Forseth, 2012; Ødegård, Sand, Engstrøm, Stovner, Zwart, & Hagen, 2011) and experimental (Irwin, Olmstead, Carrillo, Sadeghi, FitzGerald, Ranganath, & Nicassio, 2012; Roehrs, Harris, Randall, & Roth, 2012; Smith, Edwards, McCann, & Haythomthwaite, 2007) have investigated the relationship between pain and sleep. Sleep and pain are both essential for survival, so both pain- and sleep-regulating systems, when disrupted, have an impact on patients' health (Davies, et al., 2008; Davin, Wilt, Covington, & Scheman, 2014; Finan, Goodin, & Smith, 2013; Irwin, et al., 2012; Kravitz, Zheng, Bromberger, Buysse, Owens, & Hall, 2015; Mork & Nilsen, 2012; Nitter, et al., 2012; Roehrs, et al., 2012; Smith, et al., 2007). In their review of research investigating the interrelationship of sleep and pain, Finan, et al. (2013) noted, "Microlongitudinal studies employing deep subjective and objective assessments of pain and sleep support the notion that sleep impairments are a stronger, more reliable predictor of pain than pain is of sleep impairments" (p. 1596). That is, not only do patients sleep in the presence of pain, even if the pain is severe, they are more likely to have increased pain because of sleep deficit than to have sleep deficit because of pain.

Overall, findings indicated that both survey respondents and interview participants experienced challenges in incorporating acceptance of patient self-report of pain into their pain management practice in the ED. When a patient's behaviour conflicted with interview participants' perceptions of what they thought the patient's behaviour should be if the pain were real, participants judged the patient to be over-reporting or exaggerating their pain, tended to form a negative attitude toward the patient and in most cases made clinical decisions to undertreat the patient's pain based on having formed these impressions. These findings were supported in the survey results, with the large majority of respondents unable to correctly answer the KASRP case study items which were designed to test whether nurses allow a patient's demeanor (such as smiling and laughing when they have pain) to influence pain management decision making. Although nurses are routinely taught that the patient's report is the best and most reliable indicator of pain, McCaffery and Robinson (2002) have noted that many clinicians still believe that patients must "... 'act like' they are in pain" (p.

38) if they really do have moderate to severe pain. This expectation is reportedly a common reason for nurses not to treat pain (McCaffery & Robinson, 2002; Pasero & McCaffery, 2011). The relationship of participants' perceptions of patient's veracity with clinical decisions in pain management is expanded in the discussion of the second key finding.

6.1.2 Key Finding 2: Differences in Pain Management

The second key finding was that pain management was more likely to be based on best practice for patients whom participants perceived as truthful in their pain reports, compared with patients perceived as less truthful. Pain assessment based on careful attention to patient self-report is considered essential to optimal pain management (Gordon, et al., 2005), yet analysis of participants' responses to PAIN-MED survey items and to interview questions revealed that they applied different standards of care in pain management based primarily on perceptions of whether a patient had been honest in self-reporting his or her pain level.

Insight into this tendency was gained through interviews with participants, who explained the ways in which their perception of patients' truthfulness influenced patient care for their patients. During pain assessments, disbelief in a patient's pain report led to a change in attitude toward the patient. Participants reported that pain management would be based on this interpretation of the patient's pain, the pain would be determined to be less than the patient reported. This resulted in pain that was undertreated, or in some cases was left untreated.

For example, in the PAIN-MED case studies discussed above, a majority of participants indicated that they would interpret a patient's pain solely on the basis of a smile or grimace. Specifically, responses revealed that most participants would not only have titrated an inappropriately low dose of morphine for both the case study patients, but that they would do so differentially, according to differences in the patient's facial expression. Similarly, interview participants described various scenarios in their ED practice in which they would provide pain management for patients whom they believed were suffering moderate to severe pain, but would withhold analgesia when their 'reading' of the patient resulted in disbelief of the pain

self-report. As discussed in the previous section, participants reported that they were able to determine whether a patient was ‘really’ in pain or not.

This perception reportedly resulted in a two-tier system of pain management. On the one hand, patients perceived to have ‘real’ pain would receive pain management according to best practice: participants would record the patients’ reported pain level without re-calibrating or re-interpreting it, and make clinical decisions to provide prompt analgesia at the appropriate dosage for that pain level. On the other hand, for patients perceived to have falsely reported their pain, participants reportedly recorded a re-interpreted, lower pain score; they also described clinical decisions that were not related to best practice. These included withholding analgesia altogether, providing mild analgesic medications such as acetaminophen, or if an opioid were prescribed, titrating a lower-than optimal dosage.

Participants were prepared to more readily believe some patients, while others were considered unreliable. Various rationales for these divisions into ‘believable’ and ‘non-believable’ patient types were described. Patient who frequent attended the ED, or presented to the ED at short intervals with pain complaints were assumed to be doing so as a drug-seeking strategy. A diagnosis of chronic pain or a disease associated with ongoing pain, for which SCD was the exemplar provided by participants, triggered a set of assumptions about patients that amounted to stereotyping this patient group and thus failing to treat them as individuals. Participants also were confident in their ability to perceive expressions of pain that were exaggerated. Their descriptions of patients who they disbelieved indicated that participants were unaware of the phenomenon known as pseudoaddiction. Participants’ rationales for disbelieving patients are precisely described in the literature as likely indications of pseudoaddiction. Pseudoaddiction is strongly associated with SCD; it is known to occur with patients with all kinds of severe chronic pain, ongoing episodes of acute pain, breakthrough pain and neuropathic pain; moreover, it arises when such pain is left untreated or undertreated on an ongoing basis (Elander, et al., 2004; Lusher, et al., 2006).

Another reason for the undertreatment of pain by nurses participating in this research project was the belief that many patients reported ‘false’ pain due to substance abuse issues and participants made clinical decisions about their pain management based on

the misconception that opioids should not be used in patients with a history of substance abuse. A majority chose an incorrect response to the PAIN-MED survey item that specifically addressed this issue. This misconception was confirmed in interviews. Best practice would indicate that even if the patients had actual substance abuse issues (upon which the strong possibility of pseudoaddiction casts doubt), pain management with opioids should not be withheld (Pasero & McCaffery, 2011). Moreover, as indicated in the literature, the actual incidence of addiction in patients exhibiting such behaviours is extremely low, considerably lower than is generally believed among clinicians (Ferrell & McCaffery, 2012; McCaffery & Robinson, 2002; Wright & Adeosum, 2009).

One particular patient group was singled out among interview participants as likely to over-report pain, and this was patients suffering from SCD. Participants were aware that this congenital blood disorder is associated with severe pain. Nevertheless, they reported in interviews that they believed this patient group to be likely to over-report or falsely report pain and also that they made clinical decisions based on this sincerely-held belief. Patients with SCD have been identified in research as “high ED utilizers” (Aisiku, et al., 2009, p. 590). (Aisiku, et al., 2009) These patients are those who have high levels of pain and frequently attend the ED. They are often associated with caregivers’ negative attitudes and pseudoaddictive behaviours attributed to chronically undertreated pain (Aisiku, et al., 2009).

The hallmarks of sickle cell disease are chronic anaemia and painful crises arising from episodic microvessel occlusion, also associated with local inflammation, tissue damage and subsequent necrosis (Lazio, Costello, Courtney, Martinovich, Myers, Zosel, & Tanabe, 2010). This is because the haemoglobin is distorted into sickle-shaped cells with a lower capacity for carrying oxygen (Lazio, et al., 2010; Rees, Williams, & Gladwin, 2010; Stuart & Nagel, 2004). Painful crises can start within the first year and remain across the patient’s life span. With improved survival rates of children born with sickle cell disease, there is an increased need to manage painful crises into adulthood (Lazio, et al., 2010). The types of pain associated with SCD include severe acute, chronic and neuropathic pain and in this disease, the most common reason for presentation at the ED is severe pain (Aisiku, et al., 2009; Lazio,

et al., 2010; Po et al., 2013; Smith et al., 2008; Todd, et al., 2006; Wright & Adeosum, 2009). (Lazio, et al., 2010; Rees, et al., 2010; Stuart & Nagel, 2004).

The undertreatment of pain in patients with SCD has been reported in KSA, where prevalence of this disease is high (Taha & Rehmani, 2011; Udezue & Girshab, 2005). Inadequately managed pain was reported in a study of children with SCD conducted in the ED in KSA (Taha & Rehmani, 2011) as well as in a study of acute pain crisis in adults with SCD in KSA (Udezue & Girshab, 2005). Udezue and Girshab (2005) commented that ED nurses' displayed negative attitudes toward expressions of extreme pain by patients with SCD, noting, "Some patients moaned or cried out to indicate inadequate pain relief, often against a background of perceived lack of sympathy from nurses. This behaviour, which may be a pain-coping strategy, should lead to a review of patient treatment" (p. 119). These researchers called for empathy, adequate pain management and individualised care. As well, Udezue and Girshab (2005) identified that clinicians in the ED in Saudi Arabia were suspicious of patients with SCD, hostile towards them and held misconceptions about SCD pain and patient behaviour. This suggests, consistent with the present research project findings, that a prevailing unit culture in the ED may tend to support both attitudes and actions associated with sub-optimal pain management. The findings of this research project thus support those of other studies that have reported pain in SCD to be significantly undertreated in the ED (Lazio, et al., 2010; Po, et al., 2013; Smith, et al., 2008; Taha & Rehmani, 2011; Todd, et al., 2006; Udezue & Girshab, 2005; Wright & Adeosum, 2009). Studies conducted in the United Kingdom and the US have documented the association of undertreatment with pseudoaddiction (Elander, et al., 2004; Freiermuth, et al., 2014; Glassberg, et al., 2013; Haywood, et al., 2014; Zempsky, 2010). Whilst interview participants indicated knowledge of SCD and some noted its association with severe acute and chronic pain, none indicated awareness of the phenomenon of pseudoaddiction that the recent literature has reported to be often associated with SCD when patients' pain is inadequately managed.

6.1.3 Key Finding 3: Nursing Unit Cultures

The third key finding was that nursing unit cultures supported participants in making clinical decisions based on intuition, reinforced by mutually accepted practice, even when such decisions were contrary to best practice. Findings across both phases of the research study, but most particularly those of the Phase 2 interviews, suggested the existence of nursing unit cultures or institutional cultures in the ED that encouraged participants to disregard best practice. For example, participants in Phase 2 reported that on many occasions they ignored patient self-report. Participants had adopted an alternative practice of considering certain symptoms, clinical signs, behaviours and characteristics to supply the rationale for deciding the level of pain management nursing care that patients would receive.

Results from Phase 1 and findings from Phase 2 both confirmed that participants' pain management practices were influenced by deficits in knowledge and attitudes. These deficits were determined according to standards for nursing best practice which, in the case of the PAIN-MED survey, KASRP authors had noted as correct responses for survey items (Ferrell & McCaffery, 2012). Therefore, these deficits in knowledge and attitudes among participants in the present research project, which are consistent with deficits widely reported in the nursing literature, indicate that research findings regarding evidence-based best practice are not being fully incorporated into nursing practice in the ED in Saudi Arabia. As noted in the previous sections discussing key findings 1 and 2, when knowledge of best practice is not employed in practice, this is known as the research-practice gap or the evidence-practice gap (International Association for the Study of Pain, 2011b; Scott & Pollock, 2008). Participants' narrative descriptions of their own and colleagues' pain management practices enriched the researcher's understanding of the nature of the knowledge and attitude deficits, a number of which represented research-practice gaps. These pointed to ED nursing unit cultures in which nursing intuition was often favoured over best practice and prevailing myths about pain were supported as 'nursing knowledge' (Hall, 2005).

The existence of persuasive institutional cultures has helped to explain why "some organizational units (or the entire organization) exhibit dysfunctional behaviours that are counter to the organization's expressed values or mission and which hamper

efficiency and effectiveness” (Balthazard, Cooke, & Potter, 2006, p. 727). Positive unit cultures are understood to have substantial benefits for nursing staff and working conditions, but similarly, unit cultures that enable the persistence of myths about pain and pain management have also been noted in the literature (Chung & Nguyen, 2005; Shirey, 2009; Tutton, Seers, & Langstaff, 2008). Hall (2005) notes that the influence of nursing culture is an important factor in determining what nurses believe to be knowledge.

Indications were that participants did not necessarily practice what they had apparently learned in nursing school; rather, in their everyday practice they appeared to have learned from ED nursing culture to make judgements about patients. That is, practice within a particular unit culture cultivates the adoption of shared beliefs whereby accepted rituals and protocols influence what nurses accept as nursing knowledge (Hall, 2005). Clinical decisions were thus based on what the ED culture identified as knowledge, thus fostering stereotyping, negative attitudes towards certain patient behaviours and towards opioids and other narcotics. Participants’ reliance on intuition, which is highly valued in nursing (Hall, 2005) did not lead to optimal pain management in many examples they related during interviews.

Overall, it was apparent that participants were supported by their ED unit culture with regard to the rationales used to interpret patients’ pain reports. Prevailing views about how to perceive particular patient behaviours and specific categories of patient, provided participants with a sense that ED rituals and accepted practice were ‘best practice’, leading to confidence in their pain management abilities and knowledge. Results from the PAIN-MED survey (Phase 1) indicated that participants were overconfident in their pain management abilities. Overestimation of knowledge, or overconfidence in abilities, has been referred to in the literature as miscalibration of confidence (Kerfoot, 2010).

Other studies have also reported participant overconfidence in pain management ability (Bernardi, et al., 2007; Kerfoot, 2010; Rognstad, Fredheim, Johannessen, Kvarstein, Skauge, Undall, & Rustøen, 2012), which suggests that the reason may not be simply a matter of providing an accurate knowledge base since, as noted above, even possession of accurate knowledge, when applied in accordance with misconceptions and negative attitudes, may not result in optimal pain management.

Some researchers have proposed that to improve nurses' knowledge base requires recognition of the interconnectedness of knowledge and attitudes in effecting behavioural change (Gustafsson & Borglin, 2013; Kilner & Sheppard, 2010; Manchikanti, Singh, & Boswell, 2010; Schreiber, et al., 2013; Shaban, Holzhauser, Gillespie, Huckson, & Bennetts, 2012; Young & Davidhizar, 2008). Asked about whether they thought further pain education was needed, a number of interviews participants thought that it was not necessary; again suggesting miscalibration of their confidence. Nevertheless most indicated their willingness to attend pain management short-courses if they were available in their EDs. Some indicated that continuing education was useful primarily to inform nurses should there be any new analgesia or techniques they could learn about.

Given that attendance at a pain management short-course was positively associated with slightly higher knowledge and attitudes scores in the PAIN-MED survey, this suggests that an intervention strategy of providing short continuing education courses might result in some improvements to the existing knowledge of ED nurses in Saudi Arabia. Inferences from the integrated data analysis suggested that there may be a failure to incorporate knowledge of best practice, or to choose to accept myths maintained within nursing unit culture in the ED (rather than nursing knowledge). This might be due to conflicting ideas and beliefs arising from confusion about knowledge versus misconceptions about pain and pain management; it may also arise from associations with negative attitudes.

Although all interview participants were asked about institutional or nursing culture on their units, none were familiar with these terms or with the use of the word 'culture' in this particular way. Upon explanation by the researcher, most responded that they did not perceive there to be a nursing unit culture in their EDs that affected practice. Nevertheless, combining survey and interview data enhanced the interpretation of other aspects of participants' responses to survey items and to interview questions. From this analysis, it was apparent that a culture of doubt surrounding patients' veracity existed in the EDs in which participants worked. Correlated with this culture of doubt was the participants' sense of shared frustration, with few expressing feelings of empathy with their patients.

6.1.4 Key Finding 4: Frustration & Compassion Fatigue

The fourth key finding was that participants were potentially at risk for both frustration and compassion fatigue, due to the challenges of caring for patients with high pain levels in the ED environment, which is characterised by uncertainty and complexity. While a small number of interview participants did express compassion for patients and for their suffering, overall, the lack of empathy amongst many of them was striking. This finding is a matter of concern, as research has found that clinical empathy has benefits not only for patients but for clinicians as well (Craigie et al., in press; Drury, et al., 2014; Gleichgerrcht & Decety, 2014; Hegney, et al., 2014; Hirsh, et al., 2011; Hirsh, et al., 2010; Hooper, et al., 2010; Hunsaker, et al., 2015). It is apparent that the way nurses manage and prioritise pain is related to personal subjectivity that affects their judgments about patients and therefore their feelings, such as frustration and compassion. Thus subjectivity would perhaps need to be considered when introducing interventions to try promoting empathy and positively influence attitudes.

Much of what participants expressed in terms of their frustrations with patients and their limited compassion, was related to the nature of the ED environment itself, where the challenges for nursing are significant. Continuous exposure to patient suffering and trauma, as noted in the literature, can contribute to personal distress and may result in compassion fatigue (Decety, 2014; Drury, et al., 2014; Flarity, Gentry, & Mesnikoff, 2013; Gleichgerrcht & Decety, 2014; Hegney, et al., 2014; Hooper, et al., 2010; Hunsaker, et al., 2015; Showalter, 2010; Van Der Cingel, 2009; Wentzel & Brysiewicz, 2014). Compounding this is the reality of the ED environment, which is characterised by uncertainty: unpredictable conditions occur and change at a fast pace with a need for immediate decision making (Buckley, 2014; Wentzel & Brysiewicz, 2014). Pain levels are often high and many patients have acute presentations. There is often overcrowding and a lack of immediately available staff (Buckley, 2014; DeVivo, et al., 2013; Mackey, 2014; Wentzel & Brysiewicz, 2014). Thus, stress levels and emotional intensity operate at high levels.

Participants in Phase 2 were found to have been influenced by their perceptions of patients in terms of social, cultural and personal factors, as has also been reported by other researchers (Rose, et al., 2012; Schreiber, et al., 2013; Ware, et al., 2012;

Zeitoun, et al., 2013). In some cases, participants reported feelings of irritation and frustration with patients on the basis of their ethnicity, nationality or gender, as well as their particular personalities. Other sources of frustration included frequently-attending patients and those who complained loudly or were otherwise perceived to be irritating, rude, or threatening. Not surprisingly, when participants' expressed frustration, or a lack of empathy for patients whom they disliked or considered irritating, this had an impact on pain management: some participants described withholding analgesia, ignoring the patient, or deliberately delaying treatment for a period of time.

During the interviews, participants expressed little patience with or empathy for patients whom they believed were exaggerating or misrepresenting their pain. This was a common narrative thread during interviews. Prominent in interviews was participants' sense of frustration with patient behaviour and a conviction that there was widespread abuse of both narcotics and of the ED system. Similarly, other qualitative studies have indicated pain management practice to be influenced by both negative attitudes, with participants in some studies reporting feeling overwhelmed by ED complexity, being frustrated with perceived abuse of the ED, believing that patients had unrealistic expectations of the role of nurses and perceiving many patients to be substances abusers (Bergman, 2012; Bergman & Diamond, 2013; Morgan, 2012).

6.1.5 Key Finding 5: Use of Opioid Analgesia

The fifth key finding showed that participants were unclear about best practice in the use of opioid analgesia and, as a consequence, they perceived many patients with pain to be addicts and drug-seekers. A preoccupation with the perceived harms of opioid analgesia – particularly an exaggerated fear about patient addiction – was pervasive amongst both participants in both phases, despite substantial and convincing research-based evidence that opioids are not addictive when used to manage pain (Cowan, 2006; Ead, 2005; Janson, Dudgeon, Nelson, Henteleff, & Balneaves, 1997; Patterson, 2009). Participants' predominant concerns about pain management were related to the use of opioids, and their abuse. The most common rationale for undertreating pain – for example by titrating a lower than optimal dose

of morphine when a physician had left a PRN order – was that in doing so they were preventing the patient from having access to a substance that they would otherwise be likely to abuse. Participants related that they disbelieved patients’ pain reports in many cases where the treatment of choice was an opioid.

As several PAIN-MED survey items measured “both knowledge of addiction and attitude about addiction” (Ferrell & McCaffery, 2012, p. 1), the interview data provided insight into these areas. Data from the PAIN-MED survey were ambiguous about participants’ knowledge and attitudes with respect to opioids. Both the lowest- and the highest-scoring items related to correct use of opioids in pain management. This was corroborated by interview participants’ lack of clarity about the differences between addiction, tolerance and dependence, which a number apparently considered to be synonymous. Those who are on long-term opioids medications may well show symptoms of dependence and tolerance, but these symptoms are not indicative of addiction (Ballantyne & LaForge, 2007; Bounes, et al., 2014; McCaffery, 1999; Patterson, 2009). To withhold analgesia because of suspected substance abuse is thus contrary to established and accepted safe practice. Extreme wariness about administering even appropriately-prescribed opioids was common amongst participants, despite substantial evidence in the literature that opioids are safe and necessary to administer when the pain type and severity indicates their use, even when substance abuse has been confirmed (Benedict, 2008; Morgan, 2012; Pasero, 1995).

Misconceptions about opioids and the risks of addiction come under the umbrella heading in the literature of ‘opiophobia’ (Rhodin, 2006). Inadequate pain management has been associated with opiophobic attitudes and exaggerated fears about addiction and harmful side effects (Helms & Barone, 2008). The patient behaviours that participants described as conclusive evidence of addiction are all detailed in the literature on pseudoaddiction, described in detail in a previous section (Elander, et al., 2004; Lusher, et al., 2006; Wright & Adeosum, 2009).

Unfortunately, in addition to the medical consequences, participants sometimes added to patients’ distress and difficulty by activating social and legal consequences for patients interpreted as drug-seeking. Participant reported informing authorities about their suspicions, describing such actions to be necessary and appropriate.

Patients might trigger this response in ED nurses by expressing their need or desire for rapid pain relief, by demonstrating knowledge of medication types and dosages or preferred administration routes, or by attending the ED frequently. These, as participants reported, were interpreted as the manipulative behaviour of a patient with mental health and/or substance abuse or addiction. Misinterpreting patient knowledge or high ED use as indicative of drug addiction has also been thoroughly covered in the literature, especially the literature on pseudoaddiction (Elander, et al., 2004; Lusher, et al., 2006).

When patients with severe pain are misidentified as substance abusers, this contributes to a 'vicious cycle' of nurse distrust and escalating patient desperation in the face of undertreatment or non-treatment their pain (Elander, et al., 2004; Lusher, et al., 2006). When such behaviour is frequently seen, it may well be perceived as addictive behaviour; much more frequently than is realised, however the problem is not overtreatment with opioids, but inadequate pain management of patients with chronic and severe recurring acute pain episodes. These patients are not malingerers; their desperation, which may well be misinterpreted, is a signal that the pain assessment and pain management they have been receiving is urgently in need of review (Wright & Adeosum, 2009).

6.1.6 Summary

With respect to knowledge, this project's findings indicated that in all the Saudi Arabian EDs studied in the present research project, RNs held a number of misconceptions and beliefs about pain that are contrary to best practice in nursing. Both a lack of knowledge, and a failure to incorporate knowledge into nursing practice, were implicated in sub-optimal pain management and in pervasive negative attitudes towards many patients, not only as expressed in interviews by Phase 2 participants, but also as indicated in Phase 1 in the KASRP results and as expressed directly by Phase 1 participants in their write-in comments at item 57 of the PAIN-MED survey. Analysis of results and findings indicate that lack of knowledge, misconceptions and beliefs erroneously held to be knowledge, and negative attitudes both to patients and to the use of opioid analgesia for pain, constituted substantial barriers to optimal pain management in the ED in Saudi Arabia that were largely

unacknowledged by participants in both phases of the project. Moreover, it was apparent from responses to open-ended questions in Phase 1 and from interview data in Phase 2 that ED nursing unit cultures tended to support both the misconceptions that participants held to be knowledge, and that negative attitudes – such as disbelieving patients’ pain reports – constituted good nursing practice and promoted good pain management in the ED.

6.2 Implications and Recommendations

With regard to the findings of this research project, there are several implications for pain management in the ED in Saudi Arabia. The findings add to what is already known about pain as an urgent problem in Saudi Arabia. The identification of knowledge and attitude deficits among RNs in the ED in Saudi Arabia includes deficits in the following areas: knowledge about the impact of pain undertreatment on patient physiological and psychological status, best practices with respect to opioids; evidence-based rather than myth-based information about the actual incidence of chemical dependency associated with treating pain with opioids and the need to ensure patient self-report is given primacy in pain assessment. As well, because the ED setting is stressful by its very nature, and is known to be associated with compassion fatigue, institutions should be aware of the need to support not only the educational needs of ED nursing staff, but also the needs that arise from the emotional stresses of nursing practice in a setting where trauma and suffering are ubiquitous (Hooper, et al., 2010; Wentzel & Brysiewicz, 2014).

6.2.1 Recommendations for Education and Clinical Practice

Findings of this research project identified that participants had less than adequate knowledge and attitudes regarding pain, as corroborated by both quantitative results and qualitative findings. Education to address these deficits should highlight identified research-practice gaps. There is a need to provide ED-specific short-course continuing education and training in pain management; a focused approach to pain management practice is recommended, based on conducting continuous in-service, short-course activities and workshops that address the importance of adequate pain

management among patient, the best evidence-based practice and the review of current practices.

To overcome the influence of nursing unit culture in determining what is correct knowledge, a two-fold approach should be adopted, with both educational and behavioural interventions combined in short-course workshops. For example, ED nurses require up-to-date information with respect to the harm that accrues to patients when pain is undertreated and this information must be supported with clear assessment protocols for recording patient self-report, specifying the primacy of patient self-report and explicating the harmful role of negative attitudes and disbelief and/or distrust of patient veracity. Pain as the fifth vital sign should be clearly delineated as a compulsory element in triage protocols.

Following the implementation of educational programmes, research is required to focus on the impact of in-service educational programmes aimed at improving ED nurses' practice of pain assessment and management in the ED in Saudi Arabia. It is also recommended that findings from this study and the evidence-base inform further research efforts and the development of clinical practice guidelines. These should address both weaknesses and strengths and promote optimal pain management practices. When further research is carried out, investigations are recommended to determine how the length of time since qualification or since attendance at a short course in pain management affects knowledge and attitudes regarding pain. Research investigating the extent of overconfidence or miscalibration of confidence should be designed to determine ways to develop a more accurate sense among nurses of the role their knowledge and attitudes play in pain management, so as to enhance nurses' knowledge base, correct misconceptions and erroneous beliefs especially those supported by nursing unit cultures, and to encourage RNs in the ED to actively engage in addressing negative attitudes. A further recommendation is that research such as that conducted amongst RNs in Australia by Hegney, et al. (2014), and in the ED in Australia by Hooper, et al. (2010) should be conducted to assess the role of compassion fatigue and compassion satisfaction amongst ED nurses in Saudi Arabia. It is recommended that a validated quality-of-life tool such as the ProQOL Tool (Stamm, 2010) be used to investigate the role of these factors in Saudi Arabian EDs.

Lastly, it is recommended to include patient groups in some research, to understand the effects of such programs on patient outcomes and satisfaction.

The level of frustration about nursing patients with pain in the ED, as expressed by participants in both phases, strongly suggests that there is little awareness of the potential for ED nurses to be at risk for burnout and compassion fatigue. Thus, it is recommended that education be provided to help ED nurses in Saudi Arabian EDs to better understand the importance for both patients and nurses in promoting and sustaining empathy, as has been noted by researchers in the field of compassion satisfaction and compassion fatigue (Craigie, et al., in press; Drury, et al., 2014; Gleichgerrcht & Decety, 2014; Hegney, et al., 2014; Hooper, et al., 2010; Hunsaker, et al., 2015; Showalter, 2010; Wentzel & Brysiewicz, 2014). Anticipating that feelings of frustration will inevitably arise in the high-stress ED environment will assist nurses in dealing with such feelings constructively, and thus help to reduce the risk of burnout and compassion fatigue (Craigie, et al., in press; Drury, et al., 2014; Gleichgerrcht & Decety, 2014; Hegney, et al., 2014; Hooper, et al., 2010; Hunsaker, et al., 2015; Showalter, 2010; Wentzel & Brysiewicz, 2014). An understanding of what compassion fatigue is and its detrimental effects on patient care and on professional satisfaction and job efficacy should be taught as well.

It is also of paramount importance to provide education, based on the most up to date research, regarding the use of opioid analgesia, based in best practice rather than myths, misconceptions and widely-held but erroneous beliefs. This education should encompass not only RNs at the bedside of patients in the ED, but also nurses managers in the ED, to ensure that nurses at all levels in the ED fully comprehend the symptoms of tolerance and dependence as well as the symptoms and causes of pseudoaddictive behaviours, as distinct from addiction. Education is also recommended to ensure that RNs are able to make clearly delineated distinctions between chronic or neuropathic and acute pain, and to be informed about the specific protocols for these types of pain in which the treatment of choice in best practice is opioid analgesia. Pain assessment re-training should be implemented to ensure that nurses' top priority is patient self-report so that this 'gold standard' is fully incorporated into nursing practice in the ED in Saudi Arabia.

Short-course education and training should provide explicit descriptions of how and what nurses' optimal pain management practice is; they should direct these practices to be patient-centred, rather than being based in unit culture. It is recommended to update competency-based training of nurses within the ED in order to incorporate areas concerning pain management and assessment practice identified as not covered within current training. The overarching goal of ongoing education and training should be to address both knowledge and attitudes and establish a new, positive unit culture with patient self-report as the 'gold standard' for pain assessment.

6.2.2 Implications for Policy

Some participants noted that their EDs did not have well-defined guidelines and protocols, while others stated that their particular ED had adopted standards from other jurisdictions, which they use at the discretion of the individual hospital. Thus these protocols, where they exist, vary from ED to ED. Because Saudi Arabia is currently awaiting the creation of a formally-defined nursing scope of practice, the onus to date still falls upon individual institutions and departments to define nursing practice (Aldossary, 2013). A scope of practice for nursing in Saudi Arabia will be foundational for the development and implementation of standardised pain protocols for nurses, with specific protocols for a range of frequently-encountered ED presentations.

6.2.3 Recommendations for Further Research

Following the implementation of educational programmes, research is required to focus on the impact of in-service educational programmes aimed at improving ED nurses' practice of pain assessment and management in the ED in Saudi Arabia. It is also recommended that findings from this study and the evidence-base inform further research efforts and the development of clinical practice guidelines. These should address both weaknesses and strengths and promote optimal clinical practices in pain management. When further research is carried out, investigations are recommended to determine how the length of time since qualification or since attendance at a short course in pain management affects knowledge and attitudes regarding pain. Research investigating the extent of overconfidence or miscalibration of confidence should be

designed designed to determine ways to develop a more accurate sense among nurses of the role their knowledge and attitudes play in pain management, so as to enhance nurses' knowledge base, correct misconceptions and erroneous beliefs especially those supported by nursing unit cultures, and to encourage RNs in the ED to actively engage in addressing negative attitudes. A further recommendation is that research such as that conducted amongst RNs in Australia by Hegney, et al. (2014), and in the ED in Australia by Hooper, et al. (2010) should be conducted to assess the role of compassion fatigue and compassion satisfaction amongst ED nurses in Saudi Arabia. It is recommended that a validated quality-of-life tool such as the ProQOL Tool (Stamm, 2010) be used to investigate the role of these factors in Saudi Arabian EDs. Lastly, it is recommended to include patient groups in some research, to understand the effects of such programs on patient outcomes and satisfaction.

6.2.4 Summary

For RNs who manage pain in the ED, education is recommended to improve knowledge and correct misconceptions, and to ensure that RNs who assess and manage patients' pain are aware of the importance of best practice in pain assessment and pain management and that they incorporate it into their nursing practice. It is recommended as well that RNs in the ED be provided with education related to nurses' attitudes, compassion fatigue and compassion satisfaction. With respect to policy, it is noted that Saudi Arabia has yet to formally define a scope of nursing practice; as well, there is yet no standardised set of nurse-based pain protocols defined for use in the ED in Saudi Arabia. Finally, given that the ED setting in Saudi Arabia is understudied at present, additional research is recommended in a number of areas, including: the efficacy of educational and training programs in addressing deficits in RNs knowledge and attitudes, and the effect of implementing such programs on overcoming barriers in to optimal pain management in the ED, as well as on patient satisfaction and patient outcomes; and the roles of compassion satisfaction, compassion fatigue, burnout, stress among ED nurses in Saudi Arabia.

6.3 Strengths of the Research Project

Strengths of the research included: (1) the use of a cross-sectional survey in the quantitative phase; (2) the use of semi-structured interviews in the qualitative phase; (3) mixing of the data within the two-phase, mixed methods study design comprising both quantitative and qualitative methods; and (4) the size of the study as well as having achieved a satisfactory response rate for the PAIN-MED survey in Phase 1 and having reached data saturation in the Phase 2 interviews.

6.3.1 The Quantitative Cross-Sectional Survey Method

A substantial strength of the present research project was the method used to collect quantitative data in Phase 1. The cross-sectional survey is a research method that is acknowledged to be a powerful way to collect a large amount of descriptive data as was required to address the research questions regarding knowledge and attitudes regarding pain, as well as barriers and facilitators to optimal pain management, in the understudied ED setting in Saudi Arabia. Moreover, as the cross-sectional survey design was based on and adapted from two previously-validated tools, this allowed the researcher to have a broad basis for comparison in the nursing literature so as to contextualise the knowledge and attitudes of RNs in the ED setting in Saudi Arabia, within the body of literature related to similar quantitative studies of nurses' knowledge and attitudes regarding pain. This built-in capacity for comparison with internationally-based nursing research was another strength of the study.

6.3.2 The Qualitative Semi-Structured Interview Method

For Phase 2 of the research project, the semi-structured interview method was used. This added another strength to the study as it meant considerable flexibility for the researcher, who personally conducted the interviews. This flexibility was important as there can be many unanticipated issues that arise in settings that are understudied, as was the case in this research project. Not only did the semi-structured format allow the researcher to explore and clarify participants' responses during the course of the interviews, it also allowed the interviewer and interviewee to delve more deeply into the nature of participants' experiences and perceptions through the

judicious use of prompts or probing questions (Dillman, 2007; Holloway & Wheeler, 2013). In addition the interview method provide opportunities for the researcher to gain insight into the survey findings as revealed during the preliminary analysis of the subset of surveys (n=174) that were returned by the time that interviews began. The semi-structured interview format was ideal for the mixed-methods study design because of the inherent connection it allowed between the two data sets.

6.3.3 Mixing of Findings within the Mixed Methods Design

Another important strength of the research project was the mixed methods approach, in which both quantitative and qualitative data were collected and subjected to both individual and integrated analysis. During the mixing of these data sets, the researcher was able to note when correlations and correspondences between the data sets emerged. In addition, she was also able to identify ways the two data sets seemed to contain contradictions. Based on preliminary analysis of quantitative data it was possible to investigate some of these areas of interest by asking relevant probing questions during interviews.

As a thorough search of the literature revealed, there had been no previous mixed methods studies that investigated nurses' knowledge and attitudes regarding pain, or barriers and facilitators to pain management, within the ED setting in Saudi Arabia. The research design is applicable to the multi-dimensional and complex issue of pain management, as it allows for the development of greater understanding of the phenomenon leading to recommendations for improving practice (Carr, 2009). A significant result of mixing the two data sets was that the convincingness of the findings was strengthened (Carr, 2009; Creswell, et al., 2011; Hesse-Biber, 2010; Ivankova, et al., 2006; Ring, et al., 2010; Small, 2011; Tashakkori & Newman, 2010). In addition this use of mixed methods enabled the researcher to consider and develop an understanding of various dimensions of the problem: the effect of this is to increase confidence in the research results (Creswell & Plano Clark, 2011). This use of mixed methods has allowed for the development of deeper insight and thus a more comprehensive picture of the phenomenon under investigation than would have been possible with a single method used alone. What is gained in the mixed methods approach as well is improved consistency and accuracy of data (Johnson, et al., 2007

) within a fuller understanding of the problem of pain management in the ED in Saudi Arabia.

6.3.4 Survey Size and Response Rate

The large number of responses to the PAIN-MED survey (n=629) is a strength of the study. Study size affects generalizability, with larger surveys, particularly those with satisfactory response rates, considered to have greater generalisability (Agency for Healthcare Research & Quality [AHRQ], 2008; Burns & Grove, 2009; Connelly, 2009; Coughlan, et al., 2009; Dillman, 2009; Etchegaray & Fischer, 2011). The survey size for the PAIN-MED survey used in the present research compares favourably with other studies investigating nurses knowledge and attitudes regarding pain in the ED and with studies investigating barriers and facilitators to pain management in the ED. Mocerri and Drevdal's (2014) study in a US ED included survey distribution at five hospital EDs with 97 respondents returning surveys. An earlier study of emergency nurses by Tanabe and Buschmann (2000) consisted of 305 respondents to a knowledge and attitudes survey. Ucuzal and Doğan (2015) distributed surveys at two hospitals in Turkey and reported their study size at n=57. Bennetts et al. (2014) conducted a study in six Australian EDs with 47 participants. Tsai and colleagues (2007) surveyed 249 emergency nurses at nine EDs in Taiwan. To date, the body of research on this topic that has been conducted specifically in the ED is quite limited and the size of most of the studies conducted in this specific setting is considerably smaller than the present research project.

The response rate obtained for the Phase 1 PAIN-MED survey, at 43.7%, compared favourably with reported response rates for other BOPM-only studies (between 28 and 36%) (Czarnecki et al., 2011; 2007; Van Niekerk & Martin, 2001) and was better than or comparable to rates for other KASRP-based studies (reported at between 25% and 52%) (e.g. Al Qadire & Al Khalaileh, 2012; Brown, et al., 1999; Brunier, et al., 1995; Heath, 1998; Kaki, et al., 2009; Lewthwaite, et al., 2011; Tse & Chan, 2004). Response rates in the 40-60% range are typical of healthcare-related, paper-based surveys, as noted by the Agency for Healthcare Research and Quality (2008) at the US Department of Health and Human Services, and are considered satisfactory.

Thus, the sample size and response rate are an important strength of the present research project.

6.3.5 Summary

The size of the study, which was built into the design, combined with the satisfactory response rate to contribute substantially to the strengths of the research project. Other strengths built into the research design included the two compatible data collection methods. The quantitative data collection and analysis offered the breadth of data that was needed to gain a good understanding of the level of knowledge and attitudes of nurses in the ED in Saudi Arabia. Supplementing this was the qualitative data collection and analysis during Phase 2, which contributed depth of understanding through the richness of data that the interviews offered. Additionally, the mixing of the data within the two-phase, sequential explanatory mixed methods design for the research project allowed for the development of rich insight into RNs' pain management practice in this understudied setting.

6.4 Limitations of the Study

Limitations of the study included: (1) lack of data about the country in which participants had received their educational credentials in nursing, prior to being certified in Saudi Arabia; (2) purposive sampling in Phase 2 interview; (3) missing data on a large number of surveys.

6.4.1 Lack of Pre-Registration Education Data

One limitation of the research project was that no survey data were collected on country of pre-registration education or training. It was therefore not possible to differentiate and examine survey results amongst expatriate nurses educated in other countries other than Saudi Arabia, Saudi nationals educated in other countries and Saudi nationals educated in Saudi Arabia. Such differentiation has not been widely reported in the literature, although Brunier, et al. (1995) reported a significant correlation between nurses educated in Canada, Britain and the US and higher NKAS

scores, with these participants achieving significantly higher scores than nurses educated in the Philippines.

6.4.2 Lack of Data on Recentness of Pain Management Training

An additional limitation of the research project was that data were not collected to determine how recently survey participants had completed pain management training, or short courses in pain management. Thus, while a significant correlation was found between participants having taken a short course in pain management, it was not possible to determine whether having taken such a course was correlated to KASRP scores.

6.4.3 Sampling of Interview Participants

Another limitation was related to the purposive sampling of Phase 2 interview participants from amongst the survey participants at just two sites. Despite the researcher's significant efforts at recruiting participants from all 12 of the hospitals that participated in Phase 1, volunteers to participate in interviews were successfully recruited from only two of these sites. A frequently-noted reason, given primarily by the HNs and DONs at the participating EDs, was that many RNs had too heavy a workload to be able to participate. As noted by King (2004), this is a common issue confronting researchers in certain occupations and organisations. In addition, however, general reluctance to be interviewed was noted during recruitment and although interview reluctance in the Saudi Arabian nursing context is not specifically noted in the literature, Almutairi et al. (2015) refer to both Saudi national and non-Saudi RNs practicing in Saudi Arabia as experiencing significant disempowerment in the context of their employment as nurses. Specifically, these researchers found that RNs in Saudi Arabia perceived a lack of control over their professional environment, "result[ing] in profound feelings of inequity, discouragement, intimidation in this context and perceptions of lack of support from the hospital management" (Almutairi, et al., 2015, p. 21). It is possible that perceptions of such a kind may have contributed to the difficulties in recruiting interview participants from a wider group of hospital EDs.

6.4.4 Missing Data

There were missing data on a large number of surveys (534 of 629 were incomplete; 95 were complete), with a minority of participants (15.1%) in the PAIN-MED survey answering all the demographic, KASRP and BOPM questions. Although the missing data presented some challenges, each of the 534 incomplete surveys had less than 5% missing data, a rate which Tabachnick and Fidell (2006) indicate may be considered sufficiently complete for inclusion. Thus, all 629 of the returned surveys were included in the analysis and the researcher employed robust statistical analytic methods to minimise the impact of missing data upon the results. However, the use of listwise deletion in the analysis of confidence in relation to the KASRP data probably limited the amount of usable data more than would have been the case if a multiple imputation method had been used; the consequent restriction on the size of the sample and the reduction in power should be considered a limitation in this study (Cheema, 2014; Peeters, et al., in press; Van Ginkel, et al., 2014).

6.4.5 Sampling Strategies

The Saudi Arabian healthcare system consists of both public and private healthcare services, with the private sector hospitals catering mainly to the health needs of non-Saudi citizens, and governmental health ministry hospitals and quasi-government military hospital systems providing comprehensive health care to Saudi citizens (Aldossary, et al., 2008). The exclusion of private hospitals from the research project is a potential limitation of the study because the sample may have been skewed by using only public sector hospitals.

In addition, the population sampled for the study were RNs working in the EDs of hospitals in the cities of Riyadh, Jeddah, Makkah and Taif; hospitals EDs in rural areas of Saudi Arabia were not included in the research project. The exclusion of rural and semi-rural hospitals could be considered a limitation of the study.

6.4.6 Summary

Among the limitations of the study was the fact that data were not collected on country of pre-registration education or training, nor on how recently participants

with short-course pain management training had participated in that training. These data would have deepened the understanding the role of education in RNs pain management. In addition, sampling a greater number of hospitals during the Phase 2 interviews would have increased the strength of the study. The fact that many surveys were missing data was also a limitation; a multiple imputation strategy for the handling of missing data could have been employed in an effort to avoid the reduction in power that could have resulted from the use of a listwise deletion strategy. Finally, the sampling strategy which limited the population to RNs working in EDs only in public sector hospitals in four key cities in Saudi Arabia, is another potential limitation of the study.

6.5 Conclusions

This research project, with its two-phase mixed methods design, allowed the researcher to obtain knowledge and a comprehensive understanding of nurses' pain management practice in the ED in Saudi Arabia. Overall, it is apparent that the five key findings identified in this research are related through the core issue of nurses' knowledge and attitudes. Findings identified areas representing research-practice gaps with respect to both pain assessment and pain management; widespread misconceptions and erroneous beliefs about the use of opioid analgesia, and prevailing nursing unit cultures that influenced pain management, such that some patients' pain was not managed according to best practice; and finally, participants, who necessarily encountered a great deal of suffering and distress on a daily basis in the ED environment, expressed signs of frustration and may possibly be at risk for compassion fatigue.

There are numerous studies whose results support and inform the key findings in the present research project, as noted in the foregoing discussion. However, this research project, through its mixed methods design, has been able to identify some of the ways the complex, intertwined factors that are implicated in pain management are affecting the way RNs manage their patients' pain in the ED in Saudi Arabia. The findings indicate not just that there are knowledge and attitude deficits in the ED in Saudi Arabia, but suggest how and why these deficits can be implicated in sub-optimal pain management. The key findings and recommendations offer insights that

may also have important applicability to pain management in other geographic regions, in the ED as well as in other acute settings. This research project has pointed to strategies for addressing issues related to sub-optimal pain assessment and pain management in nursing education, practice and policy in Saudi Arabia. Implementation of these strategies has the potential to ameliorate not only the suffering of individual patients, but also to contribute to the important goal of reducing the significant and costly burden of pain.

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Glossary

- **Acute Pain**

Acute Pain is pain that typically occurs because of tissue damage that results from injury or disease and has a sudden onset. It tends to be limited in time decrease over a short period of time (i.e., days, hours, minutes), usually occurring in the area of the disease or injury. Acute pain is defined by the American Pain Society as “pain that follows injury to the body and generally disappears when the bodily injury heals. It is often, but not always, associated with objective physical signs of autonomic nervous system activity such as tachycardia, hypertension, diaphoresis, mydriasis, and pallor” (American Society for Pain Management Nursing, 2010, p. 3)..

- **Addiction**

Addiction “is a primary, chronic, neurobiological disease, with genetic, psychosocial, and environmental factors influencing its development and manifestations. It is characterized by behaviours that include one or more of the following: impaired control over drug use, compulsive use, continued use despite harm, and craving” (American Society for Pain Management Nursing, 2010, p. 3).

- **Allodynia**

Allodynia is pain that results from a stimulus that normally does not evoke pain.

- **Benificence**

Benificence is defined as taking positive action to help others and the desire to do good; it is a core principle of patient advocacy

- **Dysaesthesia**

Dysaesthesia is evoked or spontaneously altered sensation. Discomfort rather than pain” (American Society for Pain Management Nursing, 2010, p. 3).

- **Hyperalgesia**

Hyperalgesia is pain that is greater than would normally be expected from a noxious stimulus.

- **Hyperpathia**

Hyperpathia is “exaggerated and prolonged response to stimulation. May be delayed in onset and after repeated stimulation. Often an explosive onset” (Steeds, 2009, p. 510).

- **Hypoalgesia**

Hypoalgesia is “pain that is less than would normally be expected from a noxious stimulus” (Steeds, 2009, p. 510).

- **Neuropathic Pain**

Neuropathic pain is pain that is persistent and that arises from abnormalities in the central or peripheral nervous system. The cause may be actual damage to the nervous system, or abnormal transmission of pain messages within the nervous system that indicate the presence of a noxious stimulus where none exists (Raouf, Quick, & Wood, 2010; Woolf, 2010). As defined by Steeds, neuropathic pain is “pain or abnormal sensation initiated or caused by a primary lesion or dysfunction of the nervous system. This can be a motor, sensory or autonomic dysfunction. Patients can report spontaneous pain, in the absence of an obvious peripheral stimulus. The pain may be paroxysmal or continuous and is often described as a ‘burning’, ‘tingling’, ‘shooting’, ‘stabbing’ or ‘numb’ sensation. Neuropathic pain is also characterized by evoked pains” (Steeds, 2009, p. 510). These evoked pains may include allodynia, hyperalgesia, hyperpathia, hyperaesthesia, or dysaesthesia.

- **Nociception**

Nociception differs both from pain and from pain perception. It is “the neural process involving the transduction and transmission of a noxious stimulus to the brain via a pain pathway” (Patel, 2010, p. 13). Nociception is considered to be different from pain because “nociception can lead to pain, which can come and go, and a person can have pain sensation without obvious nociceptive activity” (Loeser, 2008, Taxonomy, para. 1). Nociception is not the same thing as pain perception. It is “the neural process involving the transduction and transmission of a noxious stimulus to the brain via a pain pathway” (Patel, 2010, p. 13).

- **Nonmalificence**

Nonmalificence is the obligation not to do harm.

- **Oligoanalgesia**

Oligoanalgesia is the undertreatment of pain.

- **Opiophobia**

Opiophobia is a fear or reluctance to prescribe opioids analgesia. Opiophobia is a commonly-held belief among health care professionals that pharmacologic interventions lead to addiction, tolerance and chemical dependence. This well-documented attitudinal barrier is the cause of much under-prescribing and undertreatment (Rhodin, 2006) and is widely implicated in inadequate pain relief (Brennan, et al., 2007a, 2007b; Heins, et al., 2006; Lipman, 2004; Rhodin, 2006).

- **Pain**

The International Association for the Study of Pain has defined pain without referring as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage” (Loeser, 2008, Taxonomy, para. 1). Other definitions of pain include “the perception of a sensation which the person calls pain, and describes variably as irritating, sore, stinging, aching, throbbing, or unbearable” (Patel, 2010, p. 13). From a neurobiological

perspective, pain has been described as: “a multidimensional experience produced by characteristic ‘neurosignature’ patterns of nerve impulses generated by a widely distributed neural network—the “body-self neuromatrix”—in the brain. These neurosignature patterns may be triggered by sensory inputs, but they may also be generated independently of them” Melzack (2005, p. 85).

Nursing has contributed the following definition: “pain is whatever the person experiencing the pain says it is, existing whenever the person says it does” (Wells, et al., 2008).

- **Pain Perception**

Pain perception is a complex interaction between the body’s pain signalling systems and the higher centres. Pain is unique for each individual because each individual’s perception is unique (Marchand, 2008; Steeds, 2009).

- **Persistent Pain (Chronic Pain)**

Chronic pain, also known as persistent pain is pain which lasts longer than three months and has a well-recognized or recurring pattern or presentation without changes in the pattern or severity of the pain, and if these occur it should be regarded and evaluated as acute pain.

- **Physical Dependence**

“Physical dependence is a state of adaptation that often includes tolerance and is manifested by a drug class specific withdrawal syndrome that can be produced by abrupt cessation, rapid dose reduction, decreasing blood level of the drug, and/or administration of an antagonist” (American Society for Pain Management Nursing, 2010, p. 3).

- **Pseudoaddiction**

Pseudoaddiction is behaviour that resemble addiction (such as asking frequently for more analgesia or higher doses than what is offered), but which resolve when pain is adequately treated. Patients are often labelled as ‘drug-seeking.’ “The cause is inadequate analgesic management and the treatment for pseudoaddiction is adequate

analgesic management. Pseudoaddiction results in a crisis of mistrust between the patient and staff and threatens the ability to provide analgesic management” (American Society for Pain Management Nursing, 2010, p. 3).

- **Tolerance**

Tolerance “is a state of adaptation in which exposure to a drug induces changes that result in a diminution of one or more of the drug’s effects over time” (American Society for Pain Management Nursing, 2010, p. 3).

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Appendix A: Pain Management in the Emergency Department (PAIN-MED) Survey



School of Nursing & Midwifery

Participant Code: _____

Hospital Code: _____

Pain Management in the Emergency Department

Thank you very much for taking the time to complete this survey. Your input is extremely valuable and your participation is very much appreciated.

This survey can be completed by writing directly on the form.

Part I Demographic information

1. Under what classification are you currently employed? (Please ✓ one only)

Registered Nurse	1	Head Nurse	2
Nurse Intern	3	Deputy Head Nurse	4
Clinical Nurse Specialist	5	Nurse Manager	6
Other (please specify)	7		

2. How many hours per week are you employed as a Nurse? _____ hours

3. As a Nurse, how many Emergency Departments have you ever worked in? (Please ✓ one only)

1 2 3 4 >4

4. As a Nurse, how many Emergency Departments do you currently work in? (Please ✓ one only)

1 2 3 4 >4

5. What is your current age? _____ years

6. Are you: MALE / FEMALE (Please circle one)

7. In what year did you first qualify as a Registered Nurse? _____

8. Please indicate your highest educational qualification. (Please ✓ one only)

Diploma	1	Baccalaureate Degree	2
Masters	3	PhD	4

In the space below, specify the major or specialty area that is related to this qualification (e.g. Medical, ICU, Pediatrics, Cardiac, Surgical, Maternity, Trauma, or Other (please specify))

9. How long in total, excluding absences from the workforce for more than 6 months, have you worked as a nurse?

Years Months

10. How long in total, excluding absences from the workforce for more than 6 months, have you worked in the Emergency Department?

Years Months

11. A) Have you completed formal education or training in Pain Management?

Yes No

- B) If yes, what kind of formal education or training in Pain Management have you completed?

Short course (less than 1 day)	<input type="text"/> 1	Short course (1-5 days)	<input type="text"/> 2
Graduate Certificate	<input type="text"/> 3	Masters	<input type="text"/> 4
Other (please specify)	<input type="text"/>		<input type="text"/> 5

12. On the scale below please circle the statement that best describes your level of confidence in managing pain in the emergency department.



Part II Knowledge and Attitudes Regarding Pain¹

The following questions assess your knowledge and attitudes related to pain management. Please circle **T** if you believe the statement is **TRUE**, or circle **F** if you believe the statement is **FALSE**

- | | | |
|--|------------------------|------------------------|
| 13. Vital signs are always reliable indicators of the intensity of a patient's pain. | <input type="text"/> T | <input type="text"/> F |
| 14. Because their nervous system is underdeveloped, children under two years of age have decreased pain sensitivity and limited memory of painful experiences. | <input type="text"/> T | <input type="text"/> F |
| 15. Patients who can be distracted from pain usually do not have severe pain. | <input type="text"/> T | <input type="text"/> F |
| 16. Patients may sleep in spite of severe pain. | <input type="text"/> T | <input type="text"/> F |
| 17. Aspirin and other nonsteroidal anti-inflammatory agents are NOT effective analgesics for painful bone metastases. | <input type="text"/> T | <input type="text"/> F |
| 18. Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period of months. | <input type="text"/> T | <input type="text"/> F |

¹ Items Adapted from: "Knowledge and Attitudes Survey Regarding Pain" developed by Betty Ferrell, RN, PhD, FAAN and Margo McCaffery, RN, MS, FAAN, (<http://prc.coh.org>), revised 2008.

- | | | |
|--|---|---|
| 19. Combining analgesics that work by different mechanisms (e.g., combining an opioid with an NSAID) may result in better pain control with fewer side effects than using a single analgesic agent. | T | F |
| 20. The usual duration of analgesia of 1-2 mg morphine IV is 4-5 hours. | T | F |
| 21. Research shows that promethazine (Phenergan) and hydroxyzine (Vistaril) are reliable potentiators of opioid analgesics. | T | F |
| 22. Opioids should not be used in patients with a history of substance abuse. | T | F |
| 23. Morphine has a dose ceiling (i.e., a dose above which no greater pain relief can be obtained). | T | F |
| 24. Elderly patients cannot tolerate opioids for pain relief. | T | F |
| 25. Patients should be encouraged to endure as much pain as possible before using an opioid. | T | F |
| 26. Children less than 11 years old cannot reliably report pain so nurses should rely solely on the parent's assessment of the child's pain intensity. | T | F |
| 27. Patient's spiritual beliefs may lead them to think pain and suffering are necessary. | T | F |
| 28. After an initial opioid dose analgesic is given, subsequent doses should be adjusted in accordance with the individual patient's response. | T | F |
| 29. Giving patients sterile water by injection (placebo) is a useful test to determine if the pain is real. | T | F |
| 30. Vicodin (hydrocodone 5 mg + acetaminophen 500 mg) PO is approximately equal to 5-10 mg of morphine PO. | T | F |
| 31. If the source of patient's pain is unknown, opioids should not be used during the pain evaluation period, as this could mask the ability to correctly diagnose the cause of pain. | T | F |
| 32. Anticonvulsant drugs such as gabapentin (Neurontin) produce optimal pain relief after a single dose. | T | F |
| 33. Benzodiazepines are not effective pain relievers unless the pain is due to muscle spasm. | T | F |
| 34. Narcotic/opioid addiction is defined as a chronic neurobiologic disease, characterized by behaviours that include one or more of the following: impaired control over drug use, compulsive use, continued use despite harm, and craving. | T | F |

Please circle the letter corresponding to the correct answer for each question.

35. The recommended route of administration of opioid analgesics for patients with persistent cancer-related pain is;
- Intravenous
 - intramuscular
 - subcutaneous
 - oral
 - rectal

36. The recommended route of administration of opioid analgesics for patients with brief, severe pain of sudden onset such as trauma or postoperative pain is;
- intravenous
 - intramuscular
 - subcutaneous
 - oral
 - rectal
37. Which of the following analgesic medications is considered the drug of choice for the treatment of prolonged moderate to severe pain for cancer patients?
- codeine
 - morphine
 - meperidine
 - tramadol
38. Which of the following IV doses of morphine administered over a 4 hour period would be equivalent to 30 mg of oral morphine given q 4 hours?
- morphine 5 mg IV
 - morphine 10 mg IV
 - morphine 30 mg IV
 - morphine 60 mg IV
39. Analgesics for post-operative pain should initially be given;
- around the clock on a fixed schedule
 - only when the patient asks for the medication
 - only when the nurse determines that the patient has moderate or greater discomfort
40. A patient with persistent cancer pain has been receiving daily opioid analgesics for 2 months. Yesterday the patient was receiving morphine 200 mg/hour intravenously. Today he has been receiving 250 mg/hour intravenously. The likelihood of the patient developing clinically significant respiratory depression in the absence of new comorbidity is:
- less than 1%
 - 1-10%
 - 11-20%
 - 21-40%
 - > 41%
41. The most likely reason a patient with pain would request increased doses of pain medication is;
- The patient is experiencing increased pain.
 - The patient is experiencing increased anxiety or depression.
 - The patient is requesting more staff attention.
 - The patient's requests are related to addiction.

42. Which of the following is useful for treatment of cancer pain?
- Ibuprofen (Brufen/Motrin)
 - Hydromorphone (Dilaudid)
 - Gabapentin (Neurontin)
 - All of the above
43. The most accurate judge of the intensity of the patient's pain is;
- the treating physician
 - the patient's primary nurse
 - the patient
 - the pharmacist
 - the patient's spouse or family
44. Which of the following describes the best approach for cultural considerations in caring for patients in pain?
- There are no cultural influences
 - Cultural influences can be determined by an individual's ethnicity (e.g., Asians are stoic, Italians are expressive, etc)
 - Patients should be individually assessed to determine cultural influences
 - Cultural influences can be determined by an individual's socioeconomic status
45. How likely is it that patients who develop pain already have an alcohol and/or drug abuse problem?
- < 1%
 - 5 – 15%
 - 25 - 50%
 - 75 - 100%
46. The time to peak effect for morphine given IV is;
- 15 minutes
 - 45 minutes
 - 1 hour
 - 2 hours
47. The time to peak effect for morphine given orally is;
- 5 minutes
 - 30 minutes
 - 1 – 2 hours
 - 3 hours
48. Following abrupt discontinuation of an opioid, physical dependence is manifested by the following;
- sweating, yawning, diarrhoea and agitation with patients when the opioid is abruptly discontinued
 - Impaired control over drug use, compulsive use, and craving
 - The need for higher doses to achieve the same effect
 - a and b

Two patient case studies are presented below. For each case study you are asked to make decisions about the patient's pain and the appropriate medication. Please select one answer for each question.

Case Study A:

Abduallah is 25 years old and this is his first day following abdominal surgery. As you enter his room, he smiles at you and continues talking and joking with his visitor. Your assessment reveals the following information:

BP = 120/80; HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/discomfort, 10 = worst pain / discomfort), he rates his pain as 8.

49. On the patient's record you must mark his pain on the scale below. Circle the number that represents your assessment of Abduallah's pain.

0	1	2	3	4	5	6	7	8	9	10
No pain/discomfort					Worst pain/discomfort					

50. Your assessment of Abduallah, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2 on the above pain scale as an acceptable level of pain relief. His physician's order for analgesia is "morphine IV 1-3 mg q1h PRN pain relief." From the list below, circle the letter corresponding to the action you will take at this time:

- a. Administer no morphine at this time
- b. Administer morphine 1 mg IV now
- c. Administer morphine 2 mg IV now
- d. Administer morphine 3 mg IV now

Case Study B:

Ahmed is 25 years old and this is his first day following abdominal surgery. As you enter his room, he is lying quietly in bed and grimaces as he turns in bed. Your assessment reveals the following information:

BP = 120/80; HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/discomfort, 10 = worst pain/discomfort) he rates his pain as 8.

51. On the patient's record you must mark his pain on the scale below. Circle the number that represents your assessment of Ahmed's pain:

0	1	2	3	4	5	6	7	8	9	10
No pain/discomfort					Worst pain/discomfort					

52. Your assessment of Ahmed, above, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2 on the above pain scale as an acceptable level of pain relief. His physician's order for analgesia is "morphine IV 1-3 mg q1h PRN pain relief." From the list below, circle the letter corresponding to the action you will take at this time:

- a. Administer no morphine at this time
- b. Administer morphine 1 mg IV now
- c. Administer morphine 2 mg IV now
- d. Administer morphine 3 mg IV now

Part III: Barriers to Pain Management in the Emergency Department

The following questions will help us to better understand the barriers that registered nurses encounter while making clinical decision about pain management in the emergency department:

53. On the scale below please circle the statement that best describes how important you perceive pain management to be in the emergency department.

Completely Unimportant	Not very Important	Unsure	Somewhat Important	Extremely Important
------------------------	--------------------	--------	--------------------	---------------------

54. On the scale below please circle the statement that best describes how well you think that pain is generally managed by registered nurses in your emergency department.

Always Poorly Managed	Sometimes well managed	Unsure	Usually Well Managed	Always Well Managed
-----------------------	------------------------	--------	----------------------	---------------------

55. What factors hinder you in providing optimal pain management in the emergency department? (Please ✓ as many reasons as you feel apply to you)²

Inadequate or insufficient physician medication orders	1
Patient's reluctance to report pain	2
My concern about side effects of medications (other than addiction)	3
Relatives' reluctance to have patient receive medications	4
Patient's reluctance to take pain medications	5
Low priority given to pain management by medical staff	6
Low priority given to pain management by nursing staff	7
My concern about patient becoming tolerant to analgesics	8
Limitations in my knowledge of pain management	9
Limitations in my ability to assess pain	10
Competing demands on my time	11
Low priority given to pain management by nursing management	12
My concern about patients becoming addicted to pain medication	13
Other (please specify) _____	14

² Items adapted from: Van Hulle Vincent, C. (2005). Nurses' knowledge, attitudes, and practices regarding children's pain. The American Journal of Maternal/Child Nursing, 30(3), 177-183.

56. What factors assist you to provide optimal pain management in the emergency department? (Please ✓ as many reasons as you feel apply to you)

Adequate or sufficient medication orders from physicians	1
High priority given to pain management by medical staff	2
High priority given to pain management by nursing staff	3
Access to education related to pain management	4
My skills in assessing pain	5
My knowledge of pain management	6
I have sufficient time to assess and manage patients' pain	7
High priority given to pain management by nursing management	8
Other (please specify) _____	9

57. As a registered nurse working in the emergency department what do you consider to be the most pressing issues facing nurses in the emergency department in terms of being able to provide patients with optimal pain management?

1) _____

2) _____

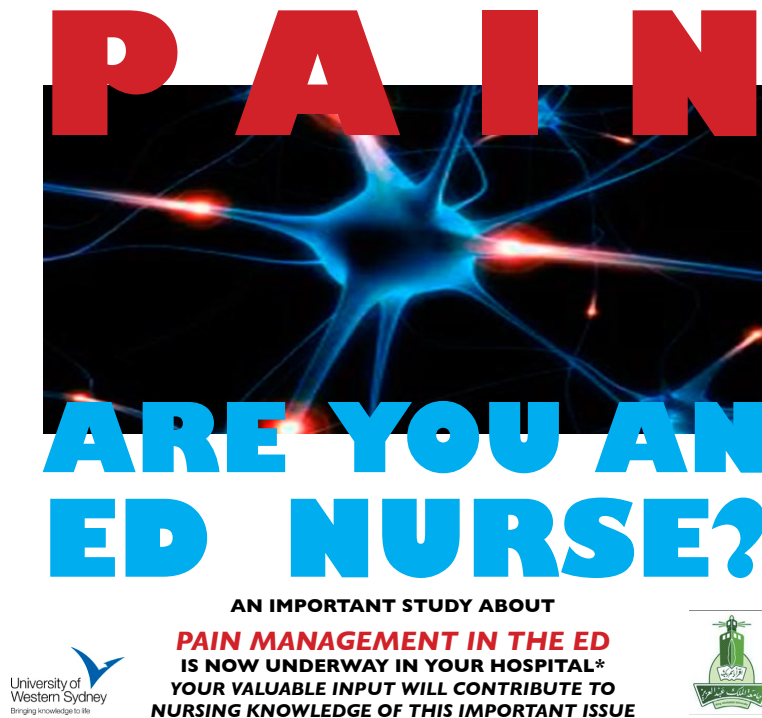
3) _____

Thank you very much again for taking the time to complete this survey. Your input is extremely valuable and your participation is very much appreciated.

Completed survey forms can be returned to the secure box which will be available in your department, or by mail in the self-addressed envelope provided with this survey to the following address:

King Abdul Aziz University Hospital
 P.O. Box 80215, Jeddah 21589
 Kingdom of Saudi Arabia
 Emergency Department
 Nihad Mohammed 4070

Appendix B: Recruitment Poster




PAIN

ARE YOU AN ED NURSE?

AN IMPORTANT STUDY ABOUT

PAIN MANAGEMENT IN THE ED
IS NOW UNDERWAY IN YOUR HOSPITAL*
YOUR VALUABLE INPUT WILL CONTRIBUTE TO
NURSING KNOWLEDGE OF THIS IMPORTANT ISSUE

University of Western Sydney
Bringing knowledge to life



PHASE 1	PHASE 2
Participation in Phase 1 will involve completing a survey, exploring issues in pain management. Time: about 20-30 minutes.	Participation in Phase 2 will involve a 30-60 min. interview with the study's chief investigator, exploring issues in pain management. Time: about 30-60 minutes.

Full confidentiality and anonymity are assured

To find out **in confidence** about participating, obtaining a survey or making an appointment for an interview, please contact: Nihad Mohammed (chief investigator) at +966555646263

Your participation is greatly appreciated!

*Participating Hospitals - Full Ethical Approval Obtained:
Jeddah: King Abdul-Aziz University, King Khalid National Guard Hospital, King Fahad Armed Forces Hospital, King Fahad General Hospital, King Abdul Aziz Hospital & Oncology Center.
Makkah: Al Noor Hospital, King Abdul Aziz Hospital (Al-Zahra), King Faisal Hospital (AL-Sheshah), Ayrad Hospital. Taif: King Abdul Aziz Specialty Hospital
Riyadh: Security Forces Hospital, King Fahad Medical Center, King Fahad National Guard Hospital.
This study has been approved by the University of Western Sydney Human Research Ethics Committee (Approval NO: H9738) and King Abdul Aziz University (Approval No: 810-12).
If you have any complaints or reservations about the ethical conduct of this research, you may contact the Ethics Committee through the Office of Research Services on:
Tel: +61 2 4736 0229 Fax: +61 2 4736 0013 or email humanethics@uws.edu.au
or: King Abdul- Aziz University Faculty of Medicine Unit of Biomedical Ethics Research Ethics Committee
Building number nine, second floor, Office 913-861

Appendix C: Interview Schedule for Phase 2 Semi-structured

Interviews

Interview schedule for Phase 2 of the Study “Knowledge and Attitudes of Pain Management by Nurses in Saudi Arabian Emergency Departments”

I'd like to start by asking you if you could tell me about (or recall for me or describe for me) an experience of managing a patient's pain in the emergency department.

[prompt]: can you tell me about the priority of pain management in the emergency department

[prompt: can you tell me about how you think pain management compares with other clinical priorities in the emergency department;

[prompt: can you give me a concrete example that illustrates how the priority you describe was arrived at?]

When you were managing this patient's pain, How did you go about making your clinical decisions about the pain management

[if interviewee does not understand what is meant by clinical decisions, interviewer can prompt here]

What clinical decision making processes did you engage in when making these decisions?

[prompt: please describe for me the processes you used when making decisions]

Why did you use these particular processes?

[prompt: please explain your rationale / justification here]

What factors do you feel influenced your decision making when managing the patient's pain?

[if interviewee identifies factors and interviewer wishes to seek further information, prompt could be: Please describe a concrete example]

If interviewee can't identify any factors, prompt could be: Why did no factors influence your decision making?

How might you improve your practice when managing a patient's pain in the ED?

How might your organisation support you to acquire further knowledge and skills in a managing a patients' pain in the emergency department?

Do you have any further comments you would like to share with me about clinical decision making when managing a patient's pain in the emergency department?

Appendix D: Human Ethics Approvals H9738

UWS HUMAN RESEARCH ETHICS COMMITTEE

10 July 2012

Professor Maree Johnson,
School of Nursing and Midwifery

Dear Maree,

I wish to formally advise you that the Human Research Ethics Committee has approved your research proposal **H9738** "*Clinical Decision Making and Pain Management in a Saudi Arabian Emergency Department*", until 13 December 2014 with the provision of a progress report annually and a final report on completion.

Please quote the project number and title as indicated above on all correspondence related to this project.

This protocol covers the following researchers:
Maree Johnson, Amanda Johnson, Ajesh George, Nihad Mohammed.

Yours sincerely

Dr Anne Abraham
Chair, UWS Human Research Ethics Committee

m.johnson@uws.edu.au
16951730@student.uws.edu.au

Locked Bag 1797
Penrith NSW 2751 Australia



Office of Research Services

Our Reference: 12/019030

11 December 2012

Professor Maree Johnson
School of Nursing and Midwifery

Ms Nihad Mohammed
School of Nursing and Midwifery

Dear Maree and Nihad

RE: Amendment Request to H9738

I acknowledge receipt of your email dated 9 December 2012 concerning a request to amend your approved research protocol H9738, *"Knowledge and attitudes of pain management by nurses in Saudi Arabian emergency departments"*.

The Office of Research Services has reviewed your amendment request and I am pleased to advise that it has been approved as follows:

1. *Amendment to study design:*
Phase 1 – Quantitative data collection
Phase 2 – Qualitative data collection
2. *Use of adapted version of the Knowledge and Attitudes Survey Regarding Pain – version as per email of 9 December 2012*
3. *Use of adapted version of Barriers to Optimal Pain Management – version as per email of 9 December 2012*

Please do not hesitate to contact me at humanethics@uws.edu.au if you require any further information.

Regards

Jillian Shute
Human Ethics Officer
Office of Research Services

Locked Bag 1797
Penrith NSW 2751 Australia



Office of Research Services

Our Reference: 12/019030

21 January 2013

Doctor Sandra Mackey
School of Nursing and Midwifery

Ms Nihad Mohammed
School of Nursing and Midwifery

Dear Sandra and Nihad

RE: Amendment Request to H9738

I acknowledge receipt of your emails dated 13 and 14 January 2013 concerning a request to amend your approved research protocol H9738, *"Knowledge and attitudes of pain management by nurses in Saudi Arabian emergency departments"*.

The Office of Research Services has reviewed your amendment request and I am pleased to advise that the following research sites have been approved:

1. King Abdul-Aziz University, Jeddah
2. King Fahed Armed Forces Hospital, Jeddah
3. King Abdul Aziz Hospital (Al-Zahir), Makkah
4. King Faisal Hospital (Al-Sheshah), Makkah
5. Ayyad Hospital, Makkah
6. Security Forces Hospital, Riyadh
7. King Fahed Medical Centre, Riyadh

Please do not hesitate to contact me at humanethics@uws.edu.au if you require any further information.

Regards

Jillian Shute
Human Ethics Officer
Office of Research Services

Locked Bag 1797
Penrith NSW 2751 Australia



Office of Research Services

Our Reference: 12/019030 | H9738

6 February 2013

Doctor Sandra Mackey
School of Nursing and Midwifery

Ms Nihad Mohammed
School of Nursing and Midwifery

Dear Sandra and Nihad

RE: Amendment Request to H9738

I acknowledge receipt of your emails dated 24 January and 29 January 2013 concerning a request to amend your approved research protocol H9738, *"Knowledge and attitudes of pain management by nurses in Saudi Arabian emergency departments"*.

The Office of Research Services has reviewed your amendment request and I am pleased to advise that it has been approved as follows:

1. *Addition of the following sites:*
 - a. King ~~Khaled~~ National Guard Hospital, Jeddah
 - b. King ~~Fahed~~ General Hospital, Jeddah
 - c. King Abdul Aziz Hospital & Oncology Centre, Jeddah
 - d. Al Noor Hospital, ~~Makkah~~
 - e. King ~~Fahad~~ National Guard Hospital, Riyadh

Please do not hesitate to contact me at humanethics@uws.edu.au if you require any further information.

Regards

Jillian Shute
Human Ethics Officer
Office of Research Services

Locked Bag 1797
Penrith NSW 2751 Australia



Office of Research Services

Our Reference: 12/019030 | H9738

13 June 2013

Doctor Sandra Mackey
School of Nursing and Midwifery

Ms Nihad Mohammed
School of Nursing and Midwifery

Dear Sandra and Nihad

RE: Amendment Request to H9738

I acknowledge receipt of your email dated 12 June 2013 concerning a request to amend your approved research protocol H9738, *"Knowledge and attitudes of pain management by nurses in Saudi Arabian emergency departments"*.

The Office of Research Services has reviewed your amendment request and I am pleased to advise that it has been approved as follows:

1. *Reciprocal approval for Phase 2 of the research to be conducted at King Abdul Aziz Specialist Hospital in Taif*

Please do not hesitate to contact me at humanethics@uws.edu.au if you require any further information.

Regards

Jillian Shute
Human Ethics Officer
Office of Research Services

Locked Bag 1797
Penrith NSW 2751 Australia
Office of Research Services

ORS Reference: H9738



HUMAN RESEARCH ETHICS COMMITTEE

22 January 2015

Doctor Sandra Mackey
School of Nursing and Midwifery

Dear Sandra,

RE: Amendment Request to H9738

The Office of Research Services has received a request to amend your approved research protocol H9738 "Knowledge and attitudes of pain management by nurses in Saudi Arabian emergency departments".

The amendment has been reviewed and I am pleased to advise that it has been approved, as follows:

Approval expiry extended to 1/4/2015.

Please do not hesitate to contact the Human Ethics Officer at humanethics@uws.edu.au, if you require any further information.

Regards

A handwritten signature in black ink, appearing to read "Elizabeth Deane".

Professor Elizabeth Deane

Presiding Member,
Human Researcher Ethics Committee

Appendix E: Participant Information Sheet (Survey)



Human Research Ethics Committee

Office of Research Services

Participant Information Sheet

Project Title: Knowledge and attitudes of pain management by nurses in Saudi Arabian emergency departments.

Who is carrying out the study?

This study is being conducted by Nihad Mohammed, as part of her PhD study at the University of Western Sydney. The study is being supervised by Dr. Sandra Mackey, Professor Amanda Johnson, and Associate Professor Elizabeth Halcomb of the School of Nursing and Midwifery, University of Western Sydney, Australia.

What is the study about?

The aim of the study is to explore the knowledge and attitudes of nurses regarding pain management within the emergency departments of hospitals in the Kingdom of Saudi Arabia.

What does the study involve?

The study involves registered nurses completing a written survey. Survey participants will be asked if they would like to take part in subsequent interviews. Completion of the survey does not compel the individual to participate in the interviews.

How much time will the study take?

The survey will take approximately 20-30 minutes to complete.

Will the study benefit me?

Although there will be no direct benefits to you for participating it is envisaged that the knowledge gained from this study will provide nurses in the Kingdom of Saudi Arabia and other countries with information on how to improve patients' pain management.

Will the study involve any discomfort for me?

There will no discomfort to you in participating in the survey, other than you might experience in reflecting on your clinical practice.

How is this study being paid for?

The PhD candidate is receiving a scholarship from King Abdul-Aziz University Hospital. Student funding from study the School of Nursing & Midwifery, University of Western Sydney is supporting the conduct of the study.

Will anyone else know the results? How will the result be disseminated?

All aspects of the study, including results, will be confidential and only the researchers will have access to information from the participants. All data will be de-identified for analysis and reporting of the findings. Findings of this study will be disseminated at conferences, presented in refereed papers within international nursing journals as well as being reported in the student's PhD thesis.

Can I withdraw from the study?

Participation is entirely voluntary. You are not obliged to be involved, if you refuse to participate this will not affect your relationship with your hospital or the University of Western Sydney. As survey data is anonymous it is not possible to withdraw your survey form once it has been submitted.

Can I tell other people about the study?

Yes, you can tell other people about the study. You may also provide them with the chief investigator's contact details. They can contact the chief investigator to discuss their participation in the research project and obtain an information sheet.

What if I require further information?

If you would like to know more please feel free to contact Nihad Mohammed, (chief investigator) by email at 16951730@student.uws.edu.au or by telephone in Saudi Arabia at +966555646263 (Saudi Arabian Number).

What if I have a complaint?

This study has been approved by the University of Western Sydney Human Research Ethics Committee (Approval number H9738). If you have any complaints or reservations about the ethical conduct of this research you may contact the Ethics Committee through the Office of Research Services at University of Western Sydney on Tel +61 2 4736 0229 Fax +61 2 4736 0013 or email humanethics@uws.edu.au. Or King Abdul- Aziz University Faculty of Medicine Unit of Biomedical Ethics, Research Ethics Committee Building number nine - second floor - Office 913-861 Telefax:+9662 6402000-02 Ext 22131 Email: kauh.rec@hotmail.com

Any issues you raise will be treated in confidence and investigated fully and you will be informed of the outcome.

If you agree to participate in this study please complete the attached survey. Completion and return of the survey indicates that you consent to participating in this study.

Appendix F: Participant Information Sheet (Interview)



Human Research Ethics Committee

Office of Research Services

Participant Information Sheet

Project Title: Knowledge and attitudes of pain management by nurses in Saudi Arabian emergency departments

Who is carrying out the study?

This study is being conducted by Nihad Mohammed, as part of her PhD study at the University of Western Sydney. The study is being supervised by Dr. Sandra Mackey, Professor Amanda Johnson, and Associate Professor Elizabeth Halcomb of the School of Nursing and Midwifery, University of Western Sydney, Australia.

What is the study about?

The aim of the study is to explore the knowledge and attitudes of nurses regarding pain management within the emergency departments of hospitals in the Kingdom of Saudi Arabia.

What does the study involve?

Your participation in the study involves an interview with the researcher exploring issues associated with pain management. This interview will be conducted at a time

and in a place convenient to you. It will be conducted in a private area and audio-recorded to facilitate analysis.

How much time will the study take?

The interview with you will take around 30 – 60 minutes to complete.

Will the study benefit me?

Although there will be no direct benefits to you for participating it is envisaged that the knowledge gained from this study will provide nurses in the Kingdom of Saudi Arabia and other countries with information on how to improve patients' pain management.

Will the study involve any discomfort for me?

There will no more discomfort to you in participating in the interview than you would feel after talking with a colleague about pain management practices.

How is this study being paid for?

The PhD candidate is receiving a scholarship from King Abdul-Aziz University Hospital. Student funding from study the School of Nursing & Midwifery, University of Western Sydney is supporting the conduct of the study.

Will anyone else know the results? How will the result be disseminated?

All aspects of the study, including results, will be confidential and only the researchers will have access to information from the participants. All data will be

de-identified for analysis and reporting of the findings. Findings of this study will be disseminated at conferences and presented in refereed papers within international nursing journals, as well as being reported in the students PhD thesis.

Can I withdraw from the study?

Participation is entirely voluntary. You are not obliged to be involved and, if you choose to participate, you can withdraw at any time without giving any reason and without any consequences. Your refusal to participate will not affect your relationship with your hospital or the University of Western Sydney.

Can I tell other people about the study?

Yes, you can tell other people about the study. You may also provide them with the chief investigator's contact details. They can contact the chief investigator to discuss their participation in the research project and obtain an information sheet.

What if I require further information?

If you would like to know more please feel free to contact Nihad Mohammed, (chief investigator) by email at 16951730@student.uws.edu.au or by telephone in Saudi Arabia at +966555646263 (Saudi Arabian Number).

What if I have a complaint?

This study has been approved by the University of Western Sydney Human Research Ethics Committee. The Approval number is H9738.

If you have any complaints or reservations about the ethical conduct of this research you may contact the Ethics Committee through the Office of Research Services at University of Western Sydney on Tel +61 2 4736 0229 Fax +61 2 4736 0013 or email humanethics@uws.edu.au. Or King Abdul- Aziz University Faculty of Medicine Unit of Biomedical Ethics, Research Ethics Committee Building number nine - second floor - Office 913-861

Telefax:+9662 6402000-02 Ext 22131

Email: kauh.rec@hotmail.com

Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.

If you agree to participate in this study, you will be asked to sign the Participant Consent Form. Following this a time and place to carry out the interview will be arranged.

Appendix G: Participant Consent Form (Interview)



Human Research Ethics Committee

Office of Research Services

Participant Consent Form

Project Title: Knowledge and attitudes of pain management by nurses in Saudi Arabian emergency departments

I, consent to participate in the research project titled "Knowledge and Attitudes of Pain Management by Nurses in Saudi Arabian Emergency Departments"

I certify that have read the participant information sheet and have been given the opportunity to discuss the information and my involvement in the project with the researcher.

The procedures required for the project and the time involved have been explained to me, and any questions I have about the project have been answered to my satisfaction.

I consent to participating in an interview, lasting between 30-60 minutes, which will be audio-taped and transcribed verbatim.

I understand that my involvement is confidential and that the information gained during the study may be published but no information will be used in any way that reveals my identity.

I understand that I can withdraw from the study at any time, without affecting my relationship with the researcher(s) my hospital or the University of Western Sydney now or in the future.

Name (Please print):

Signed:

Date:

This study has been approved by the University of Western Sydney Human Research Ethics Committee (Approval NO: H9738) and King Abdul Aziz University (Approval No: 810-12).

If you have any complaints or reservations about the ethical conduct of this research, you may contact the Ethics Committee through the Office of Research Services on:

Tel +61 2 4736 0229 Fax +61 2 4736 0013

or email humanethics@uws.edu.au

Or:

King Abdul- Aziz University Faculty of Medicine Unit

of Biomedical Ethics

Research Ethics Committee Building number nine - second floor

Office 913-861 Telefax: +96626402000-02 Ext 22131

Email: kauh.rec@hotmail.com

Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.

Appendix H: Results of Part II of the PAIN-MED Survey:

Knowledge and Attitudes Regarding Pain

KASRP Item	n (frequency)				% (percent of n responses)		% (percent of 629 returned surveys*)	
	correct	incorrect	subtotal (number of responses)	missing	correct	incorrect	missing	correct
#13 Vital signs are always reliable indicators of the intensity of a patient's pain. (False)	240	385	625	4	38.4	61.6	.6	38.2
#14 Because their nervous system is underdeveloped, children under 2 years of age have decreased sensitivity and limited memory of painful experiences. (False)	388	230	618	11	62.8	37.2	1.7	61.7
#15 Patients who can be distracted from pain usually do not have severe pain. (False)	292	328	620	9	47.1	52.9	1.4	46.4
#16 Patients may sleep in spite of severe pain. (True)	104	517	621	8	16.7	83.3	1.3	16.5
#17 Aspirin and other nonsteroidal anti-inflammatory agents are NOT effective analgesics for painful bone metastases. (False)	208	412	620	9	33.5	66.5	1.4	33.1
#18 Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period of months. (True)	328	288	616	13	53.2	46.8	2.1	52.1
#19 Combining analgesics that work by different mechanisms (e.g., combining an opioid with an NSAID) may result in better pain control with fewer side effects than using a single analgesic agent. (True)	452	163	615	14	73.5	26.5	2.2	71.9
#20 The usual duration of analgesia of 1-2mg of morphine intravenous IV is 4-5 hours. (False)	314	295	609	20	51.6	48.4	3.2	49.9
#21 Research shows that promethazine (Phenergan) and hydroxyzine (Vistaril) are reliable potentiators of opioid analgesics. (False)	265	332	597	32	44.4	55.6	5.1	42.1
#22 Opioids should not be used in patients with a history of substance abuse. (False)	203	409	612	17	33.2	66.8	2.7	32.3
#23 Morphine has a dose ceiling. (False)	215	378	593	36	36.3	63.7	5.7	34.2
#24 Elderly patients cannot tolerate opioids for pain relief. (False)	432	176	608	21	71.1	28.9	3.3	28.0
#25 Patients should be encouraged to endure as much pain as possible before using an opioid (i.e., a dose above which no greater pain relief can be obtained. (False)	336	279	615	14	54.6	45.4	2.2	53.4
#26 Children less than 11 years old cannot reliably report pain so nurses should rely solely on the parent's assessment of the child's pain intensity. (False)	415	204	619	10	67.0	33.0	1.6	65.0
#27 Patient's spiritual beliefs may lead them to think pain and suffering are necessary. (True)	409	206	615	14	66.5	33.5	2.2	65.0
#28 After an initial dose of an opioid analgesic is given, subsequent doses should be adjusted in accordance with the individual patient's response. (True)	526	85	611	18	86.1	13.9	2.9	83.6
#29 Giving patients sterile water by injection (placebo) is a useful test to determine if the pain is real. (False)	278	338	616	13	45.1	54.9	2.1	44.2
#30 Vicodin (hydrocodone 5 mg + acetaminophen 500 mg) PO is approximately equal to 5-10 mg of morphine PO. (True)	257	334	591	38	43.5	56.5	6.0	40.1
#31 If the source of the patient's pain is unknown, opioids should not be used during the pain evaluation period, as this could mask the ability to diagnose the cause of pain. (False)	144	465	609	20	23.6	76.4	3.2	22.9

KASRP Item	n (frequency)				% (percent of n responses)		% (percent of 629 returned surveys*)	
	correct	incorrect	subtotal (number of responses)	missing	correct	incorrect	missing	correct
# 32 Anticonvulsant drugs such as gabapentin (Neurontin) produce optimal pain relief after a single dose. (False)	346	256	602	27	57.5	42.5	4.3	55.0
#33 Benzodiazepines are not effective pain relievers unless the pain is due to muscle spasm. (True)	378	225	603	26	62.7	37.3	4.1	60.1
#34 Narcotic/Opioid addiction is defined as chronic neurobiologic disease, characterised by behaviours that include one or more of the following: impaired control over drug use, continued use despite harm and craving. (True)	535	69	604	25	88.6	11.4	4.0	85.1
#35 The recommended route of administration of opioid analgesics for patients with persistent cancer-related pain is? a. Intravenous b. intramuscular c. subcutaneous d. oral e. rectal	74	524	598	31	12.4	87.6	4.9	11.8
#36 The recommended route of administration of opioid analgesics for patients with brief, severe pain of sudden onset such as trauma or postoperative pain is? a. intravenous b. intramuscular c. subcutaneous d. oral e. rectal	533	81	614	15	86.8	13.2	2.4	84.7
#37 Which of the following analgesic medications is considered the drug of choice for the treatment of prolonged moderate to severe pain for cancer patients? a. <u>codeine</u> b. morphine c. Mepridine d. Tramadol	385	227	612	17	62.9	37.1	2.7	61.2
#38 Which of the following intravenous doses (IV) of morphine administered over a four hour period would be equivalent to 30mg of oral morphine every 4 hours? a. morphine 5 mg IV b. morphine 10 mg IV c. morphine 30 mg IV d. morphine 60 mg IV	169	420	589	40	28.7	71.3	6.4	26.9
#39 Analgesics for post-operative pain should initially be given? a. around the clock on a fixed schedule b. only when the patient asks for the medication c. only when the nurse determines that the patient has moderate or greater discomfort	485	127	612	17	79.2	20.8	2.7	77.1

KASRP Item	n (frequency)				% (percent of n responses)		% (percent of 629 returned surveys*)	
	correct	incorrect	subtotal (number of responses)	missing	correct	incorrect	missing	correct
#40 A patient with persistent cancer pain has been receiving daily opioid analgesics for 2 months. Yesterday the patient was receiving morphine 200 mg/hour intravenously. Today he has been receiving 250 mg/hour intravenously. The likelihood of the patient developing clinically significant respiratory depression in the absence of new comorbidity is: a. less than 1% b. 1-10% c. 11-20% d. 21-40% e. > 41%	65	510	575	54	11.3	88.7	8.6	10.3
#41 The most likely reason a patient would request increased dose of pain medication? a. The patient is experiencing increased pain. b. The patient is experiencing increased anxiety or depression. c. The patient is requesting more staff attention. d. The patient's requests are related to addiction.	394	213	607	22	64.9	35.1	3.5	62.6
#42 Which of the following medications are useful in the treatment of cancer pain? a. Ibuprofen (Brufen/Motrin) b. Hydromorphone (Dilaudid) c. Gabapentin (Neurontin) d. All of the above	283	318	601	28	47.1	52.9	4.5	45.0
#43 The most accurate judge of the intensity of the patient's pain is? a. the treating physician b. the patient's primary nurse c. the patient d. the pharmacist e. the patient's spouse or family	515	100	615	14	83.7	16.3	2.2	81.9
#44 Which of the following describes the best approach for cultural considerations in caring for patients in pain? a. There are no cultural influences b. Cultural influences can be determined by an individual's ethnicity (e.g., Asians are stoic, Italians are expressive, etc) c. Patients should be individually assessed to determine cultural influences d. Cultural influences can be determined by an individual's socioeconomic status	291	315	606	23	48.0	52.0	3.7	46.3
#45 How likely is it that patients who develop pain already have an alcohol and/or drug abuse problem? a. < 1% b. 5 – 15% c. 25 - 50% d. 75 - 100%	191	394	585	44	32.6	69.3	7.0	30.4
#46 The time to peak effect for morphine given intravenously (IV)? a. 15 minutes b. 45 minutes c. 1 hour 2 hours	487	124	611	18	79.7	20.3	2.9	77.4

KASRP Item	n (frequency)				% (percent of n responses)		% (percent of 629 returned surveys*)	
	correct	incorrect	subtotal (number of responses)	missing	correct	incorrect	missing	correct
#47 The time to peak effect for morphine given orally is? a. 5 minutes b. 30 minutes c. 1 – 2 hours d. 3 hours	369	242	611	18	60.4	39.6	2.9	58.7
Q. 48 Following abrupt discontinuation of an opioid, physical dependence is manifested by which of the following? a. sweating, yawning, diarrhoea and agitation with patients when the opioid is abruptly discontinued b. Impaired control over drug use, compulsive use, and craving c. The need for higher doses to achieve the same effect d. a and b	142	465	607	22	23.4	76.6	3.5	22.6
#49 Abdullah is 25 years old and this is his first day following abdominal surgery. As you enter his room, he smiles at you and continues talking and joking with his visitor. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/discomfort, 10 = worst pain / discomfort), he rates his pain as 8. On the patient's record you must mark his pain on the scale below. Circle the number that represents your assessment of Abdullah's pain. 0 1 2 3 4 5 6 7 8 9 10	199	399	598	31	33.3	66.7	4.9	31.6
#50 Your assessment of Abdullah, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2 on the above pain scale as an acceptable level of pain relief. His physician's order for analgesia is "morphine IV 1-3 mg q1h PRN pain relief." From the list below, circle the letter corresponding to the action you will take at this time: a. Administer no morphine at this time b. Administer morphine 1 mg IV now c. Administer morphine 2 mg IV now d. Administer morphine 3 mg IV now	46	552	598	31	7.7	92.3	4.9	7.3
#51 Ahmed is 25 years old and this is his first day following abdominal surgery. As you enter his room, he is lying quietly in bed and grimaces as he turns in bed. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/discomfort, 10 = worst pain/discomfort) he rates his pain as 8. On the patient's record you must mark his pain on the scale below. Circle the number that represents your assessment of Ahmed's pain: 0 1 2 3 4 5 6 7 8 9 10	272	325	597	32	45.6	54.4	5.1	43.2

KASRP Item	n (frequency)				% (percent of n responses)		% (percent of 629 returned surveys*)	
	correct	incorrect	subtotal (number of responses)	missing	correct	incorrect	missing	correct
#52 Your assessment of Ahmed, above, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2 on the above pain scale as an acceptable level of pain relief. His physician's order for analgesia is "morphine IV 1-3 mg q1h PRN pain relief." From the list below, circle the letter corresponding to the action you will take at this time: a. Administer no morphine at this time b. Administer morphine 1 mg IV now c. Administer morphine 2 mg IV now d. <u>Administer morphine 3 mg IV now</u>	108	494	602	27	17.9	82.1	4.3	17.2